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ABSTRACT

This guide is designed to meet the following goals: provide information that reflects the changes in technology in the 1990s; provide basic information to teachers, aides, and students who are not computer literate; and provide review information for individuals who are computer literate. The information provided may be used either for specific classroom use, or as a general reference document. Topics included are: (1) introduction to computer operations, computer hardware and software, major computer components, and computer languages and terms; (2) computer operations, keyboarding skills, preparation of diskettes, and information storage and retrieval; and (3) understanding software applications such as word processing, databases, spreadsheets, industrial robots, mathematics functions, and personal management. The appendices include a discussion of how to choose a computer system, an explanation of a disk operation system, a list of computer terms, and example test questions and answers. (27 references) (DB)

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INTRODUCTION

TO

COMPUTER LITERACY

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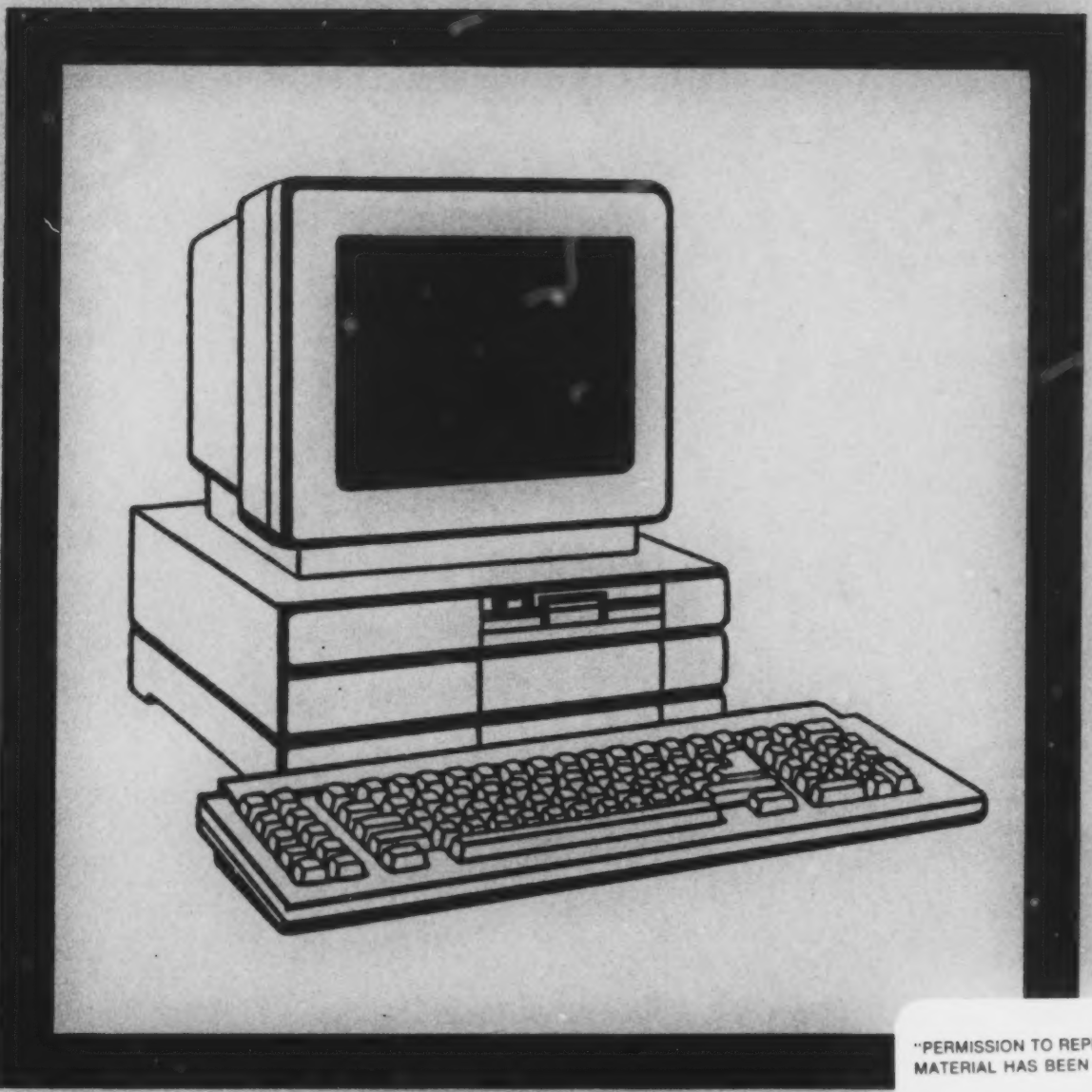

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SOUTH CAROLINA

GUIDE

FOR

INTRODUCTION TO COMPUTER LITERACY

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ACKNOWLEDGMENTS

The South Carolina Guide for Introduction to Computer Literacy was developed to encompass instruction in the area of computer literacy. We appreciate the contributions of each committee member toward producing a guide that can be used in our state classrooms.

The following teachers provided the content and technical assistance for this guide:

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USE OF THIS GUIDE

This guide is designed to meet the following goals: provide information that reflects the changes in technology in the 1990's; provide basic information to teachers, aides, and students who are not computer literate; and provide review information for individuals who are computer literate.

Basic computer literacy is no longer something that is "nice to know," but a necessity to efficient classroom management and alternative teaching techniques. It is hoped that this guide will provide teachers, aides, and students basic information to get them acquainted with using a computer.

How the guide is to be used is a matter of choice, depending on individual situations. It may be used "as is," i.e., the canned approach to teach a unit or course on computer literacy. Specific topics may be pulled out for classroom use, such as a certain teaching activity, or the test questions may be used in conjunction with other test material. Finally, the material may be used purely as a reference document within a unit or course. Teachers are cautioned that they must keep abreast of technological changes in the computer field. It is possible that some material in this guide could be outdated in three years.

Although the guide contains suggestions for specific classroom activities for each identified competency, teachers are encouraged to be creative in adapting the material to the particular needs of their students and the specific equipment available.

INTRODUCTION TO THE COMPUTER

COURSE BASIC COMPUTER LITERACY

UNIT A

Introduction to the Computer

COMPETENCY

Identify the three basic computer operations (input, processing, and output) that all computers perform.

PERFORMANCE OBJECTIVE 1

Upon completion of the unit, the student will be able to identify each of the three basic computer operations.

INSTRUCTIONAL RESOURCES

1. Illustration of input device.
2. Illustration of processing device.
3. Illustration of output device.
4. Mandell. **Introduction to Computers Using the IBM PC.**
5. Information Sheets 1 and 2.
6. Mackey. "Choosing a Computer System."

INSTRUCTIONAL ACTIVITIES

1. Define and discuss the three operations (input, processing, and output).
2. Provide samples or illustrations of each form of the three operations and explain them to the class.
3. Instruct the student to identify the operation of each of the samples as a review of the information.
4. Assign the student to take a written test on the three operations.

EVALUATION

The student will identify the operations of a computer.

COMPETENCY

Identify the three basic computer operations (input, processing, and output) that all computers perform.

INFORMATION SHEET 1

INPUT DEVICES: Category of hardware which performs the function of obtaining original data and placing it into the data processing system.

Samples: Light pen
Digitizer
Keyboard
Scanner

PROCESSING DEVICES: The things used by the computer to manipulate data to produce results.

Samples: CPU (control unit, arithmetic/logic unit, and storage unit)

OUTPUT DEVICES: Those parts that display information so it can be seen by the person operating the computer.

Samples: Video terminal
Line printer
Plotter

OTHER DEVICES:

Samples: Mouse
FAX
Modem

NOTE: Disks and tapes are storage media which may be used as input and/or output.

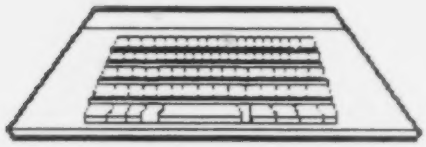
COMPETENCY

Identify the three basic computer operations (input, processing, and output) that all computers perform.

INFORMATION SHEET 2

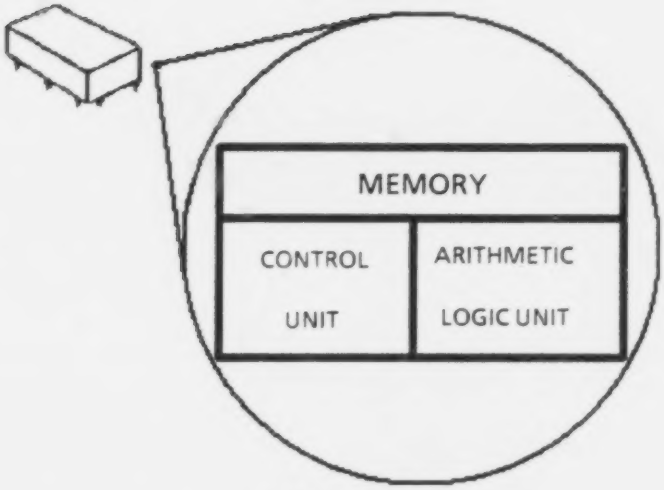
EXAMPLES OF DEVICES USED FOR COMPUTER OPERATIONS

EXAMPLE:



INPUT DEVICE

EXAMPLE:



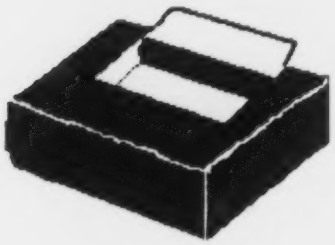
PROCESSING DEVICE

COMPETENCY

Identify the three basic computer operations (input, processing, and output) that all computers perform.

INFORMATION SHEET 2 continued

EXAMPLE:



OUTPUT DEVICE

12

COMPETENCY

Identify the three basic computer operations (input, processing, and output) that all computers perform.

ACTIVITY SHEET

Read the following list and label each as Input, Processing, or Output by putting the first letter of the operation in the blank. Some may require more than one answer.

Example:

I 1. Mouse

___ 1. Video terminal
___ 2. Scanner
___ 3. CPU
___ 4. Keyboard
___ 5. Disk
___ 6. Plotter
___ 7. Digitizer
___ 8. Light pen
___ 9. Line printer
___10. Tape

COMPETENCY

Identify the three basic computer operations (input, processing, and output) that all computers perform.

ACTIVITY SHEET Answers

Read the following list and label each as Input, Processing, or Output by putting the first letter of the operation in the blank. Some may require more than one answer.

Example:

I 1. Mouse

O 1. Video terminal
I 2. Scanner
P 3. CPU
I 4. Keyboard
I/O 5. Disk
O 6. Plotter
I 7. Digitizer
I 8. Light pen
O 9. Line printer
I/O 10. Tape

COURSE BASIC COMPUTER LITERACY

UNIT A

Introduction to the Computer

COMPETENCY

List three important reasons for using a computer.

PERFORMANCE OBJECTIVE 2

Upon completion of the unit, the student will be able to list three uses of a computer.

INSTRUCTIONAL RESOURCES

1. Local businesspeople.
2. Information Sheets 1 and 2.

INSTRUCTIONAL ACTIVITIES

1. Discuss reasons for using computers in the home, at school, or in a business.
2. Assign the student to read Information Sheet 2.
3. Discuss Information Sheet 2.
4. Invite local businesspeople to speak to the class to explain how they perform tasks without the computer and how they perform the same tasks with the computer.
5. Assign the student to complete Activity Sheet.

EVALUATION

The student will list three important reasons for using a computer.

COMPETENCY

List three important reasons for using a computer.

INFORMATION SHEET 1

Reasons for computer use:

1. They are very fast--we save time in business--time is money.
2. They allow a greater degree of accuracy.
3. They allow humans to solve more complex problems.
4. They can handle (sort) great quantities of data.

COMPETENCY

List three important reasons for using a computer.

INFORMATION SHEET 2

The use of computers has expanded to all areas of work and even to many of our leisure activities. Computers are a great asset to vocational instruction due to the high demand for faster productivity with a high degree of quality and quick turnaround. The computer has found its way into most of the vocational courses taught, including Agribusiness, Business and Office Management, Health Occupations, Home Economics, Industrial Education, and Marketing and Distributive Education.

Agribusiness

Farming is an occupation that has recently benefited from new computer uses. In the late 1980's farmers were making more use of computers and computer-assisted machinery. More and better software is being produced to meet farmers' specific needs.

Financial planning and recordkeeping for agribusiness can be streamlined by computer use. Computers can make it easier for farmers to keep accounts. The rapid calculating capability of computers is a help in making good decisions on when and what to sell or when and how much to borrow.

An even newer use of computers is coming soon for U.S. agribusiness. This technology is based on the capacity of the computer to act automatically in response to data. A computer could water certain fields of crops based on feedback about moisture. How would this work? Sensors could be buried in the field. The sensors would be connected to a computer. They would feed data on how wet or dry the soil was. At a set point, the computer would automatically open water gates or turn on sprinklers to give the crop the right amount of water.

Business and Office Management

Computers are used for accounting as well as clerical tasks. A computer can be programmed to calculate a company's payroll. The program will tell the computer when to add in overtime and how much to subtract for taxes. It will even tell the computer whose name to print on each paycheck.

Computers are useful in keeping inventory. An inventory is a detailed list of all the items in a merchant's stock, for example. Libraries and bookstores keep their inventories on computers. By inputting the correct code through a computer terminal, a librarian can tell if a particular book is checked out. In the same way, a bookstore clerk can check a computerized inventory to see if the book you want is in stock.

Some large companies have inventory and reordering tied into computer systems. When an order comes in, the computer searches the data in its memory to see if the item is in stock. If it isn't, the computer automatically puts your order "on hold" while it orders more from the supplier.

COMPETENCY

List three important reasons for using a computer.

INFORMATION SHEET 2 continued

Some businesses rely so much on computers that they probably could not continue to run without them. Banks depend on computers to keep track of millions of dollars in daily interest. Computers allow you to make a cash withdrawal from your bank account at a machine teller far from the bank. The computer which runs such a machine teller is programmed to accept certain codes. If enough money is in the account, the computer "authorizes" a withdrawal. In this example, computer output is cash.

Some business uses of computers are annoying. Perhaps you have received an overdue notice from the library. Or maybe someone in your family has received a late notice on a bill. In fact, the book had been returned and the bill had been paid. What causes this sort of mistake? In many cases, the answer is that the computer was programmed to look for unreturned books or unpaid bills at a set time. The computer could have been programmed to print out the late notice, too. If your book is taken back or your bill is paid just after this program has begun to run, the computer won't have the right data in time to take you off the list. At least, it won't take you off the list in time to avoid the late notice. In other cases, the operator makes an error in inputting data. In still other cases, there is a mechanical malfunction.

Health Occupations

Computers have important uses in hospitals and throughout the medical profession. These uses range from routine recordkeeping to the capability to help doctors "read" X-rays.

As in other fields, the great speed and the vast data storage of computers are vital. Medical knowledge is advancing rapidly. Health care workers need a lot of information--and often they need it very fast. The speed, the accuracy, and the memory of the computer can sometimes mean the difference between life and death. A doctor can use a computer to help make a diagnosis. A hospital dietitian can use a computer to help keep track of the amount of salt or fat in any patient's diet. A nurse or a ward assistant can use a computer to keep a check on the vital signs of the critically ill. These medical computers will automatically set off alarms when patients need help.

A new health-care area in which computers are being put to use is the pharmacy. Computers can keep track of each medicine and the exact dose for every patient. Computers can also compare every ingredient of every medicine to make sure there will be no adverse reaction.

Home Economics

The business uses of computers are easily translated into home-management applications. Computers can be programmed for many uses that make household chores and recordkeeping quicker and more efficient.

COMPETENCY

List three important reasons for using a computer.

INFORMATION SHEET 2 continued

Think about the repetitious tasks in your home which could be done, at least in part, by a computer. For example, you could keep track of the food you buy and use, much as a grocery store does. You could program in a grocery list. You could input the prices for certain items as advertised in your daily paper and do your comparison shopping from the comfort of your easy chair.

You could set up a household budget so that you could check your year-to-date spending in any area--fuel, food,clothes, movies--without even using a pencil!

Computers built into appliances can turn them on and off at set times. Computers linked to security systems can help protect you and your home from fire and theft.

Industrial Education

Industrial uses of computers include many uses common to most commercial concerns. These include recordkeeping, time and money management, inventory control, etc.

An application of computers in industry, introduced in the 1980's, was "robotics"--the use of computer-run robots. They can do some cleaning jobs and are also used for some quality-control tasks.

The robotic use of computers is very important in jobs that might prove hazardous to human workers. An example of this is inspecting and repairing a nuclear power plant. Radiation is not a danger to robots, but it can be to humans. A robot run by a computer can go into areas that would be too dangerous for human workers. In industry today, computers control many of the manufacturing processes with the CAD/CAM systems. (See Performance Objective 16 for explanation of CAD/CAM systems.)

Marketing and Distributive Education

Does a computer or a person ring up the price of each item on the cash register where your family shops for food? In many cases, check-out clerks simply move each item over a scanner which "reads" the price. The amount is shown on the register. At the same time, a receipt is being printed out of another device. It names each item--perhaps by brand name--and adds sales tax when it should.

What makes this possible? A computer. The scanner, the cash register display,and the printer are connected to the store's computer.

As the scanner "reads" the code on each item, the computer is able to perform many operations at once. It gives the buyer a sales slip with each item listed. It does all the math to keep a running total of the cost. It also updates the inventory as each item is sold.

COMPETENCY

List three important reasons for using a computer.

INFORMATION SHEET 2 continued

Computer use saves a store both time and money. If the price of a can of beans goes up two cents, that increase can be keyed into the computer in less than a minute. From then on, the computer will use the new price every time a can of beans is passed over the scanner. This is more efficient than having a clerk put a price on every can of beans in stock. Especially if the price of beans changes often! This use of computers is not limited to grocery stores. Many kinds of stores use computers to keep track of item prices and availability.

COMPETENCY

List three important reasons for using a computer.

ACTIVITY SHEET

Work individually (or in a group) as directed by your teacher to determine reasons why computers are used in our lives today. First, try to determine a job in which computers are utilized. Then decide what devices at that job use computers or computerized components. Third, try to decide what kind of operation the device is performing and what service it can provide for you, e.g., in a gas station: by using the gas pump monitor in the store where it provides input and output information, the clerk can limit the amount of fuel a customer is given and know exactly how much the customer received. Develop a minimum of five reasons for using a computer. As a class, discuss and list the three most important reasons for using a computer.

Answer

The teacher will conduct a class discussion to determine the validity of the list.

COURSE BASIC COMPUTER LITERACY

UNIT A

Introduction to the Computer

COMPETENCY

Differentiate between hardware and software.

PERFORMANCE OBJECTIVE 3

Following class discussion, the student will be able to differentiate between the terms hardware and software.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Clark and Lambrecht. **Information Processing**, pp. 27-28.
3. Robichaud, Muscat, and Hall. **Introduction to Data Processing**, p. 25.
4. Information Sheet.
5. Mackey. "Choosing a Computer System."

INSTRUCTIONAL ACTIVITIES

1. Instruct the student to read the Information Sheet.
2. Review and discuss with the student the contents of the Information Sheet, emphasizing the differences between hardware and software.
3. Instruct the student to complete Activity Sheets 1 and 2.
4. Review and discuss answers to Activity Sheets 1 and 2.
5. Assign the student to complete Activity Sheet 3.

EVALUATION

The student will match the correct definitions with the appropriate computer terms.

COMPETENCY

Differentiate between hardware and software.

INFORMATION SHEET

The components of a computer system can be divided into two large groups known as hardware and software. Hardware is the term used to describe all the physical equipment in a computer system. It consists of the central processing unit, input devices, output devices, and auxiliary storage devices. A typical computer system would consist of the following hardware devices:

INPUT DEVICE	PROCESSING DEVICE	OUTPUT DEVICES	AUXILIARY STORAGE DEVICES
Keyboard	CPU	Printer	Disk Drives
		CRT	Tape Drives

Software is the term used to describe the instructions the computer uses to process data. Software is made up of individual sets of instructions known as programs. The software is recorded on media such as disks, diskettes, and/or magnetic tapes. Software is available for many different applications such as word-processing, accounting, robotics, CAD, games, spreadsheets, and data bases.

COMPETENCY

Differentiate between hardware and software.

ACTIVITY SHEET 1

Use illustrations of the computer system in your class and label the components as either hardware or software.

Suggested components:

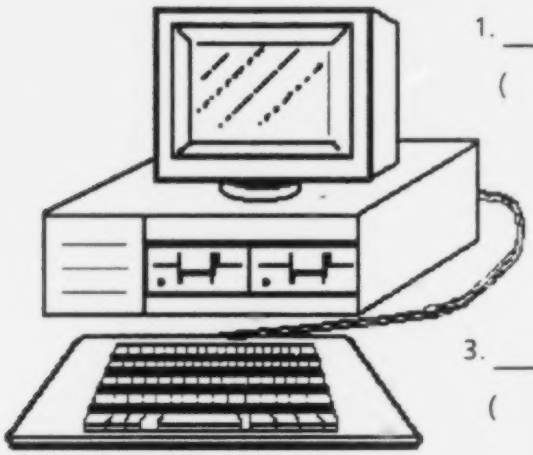
1. CRT
2. Disk Drives
3. Keyboard
4. 3 1/2" Disk
5. 5 1/4" Disk
6. Printer
7. Spreadsheet Program
8. Data Base Program
9. Word Processing Program

COMPETENCY

Differentiate between hardware and software.

ACTIVITY SHEET 2

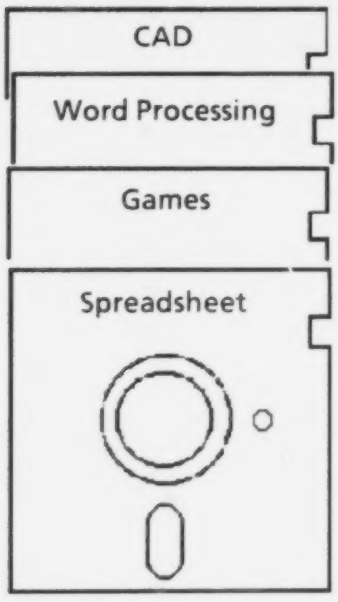
Label the following components as hardware or software and place the name of the particular hardware or software device in parenthesis.



1. _____
( )

2. _____
( )

3. _____
( )



5. _____
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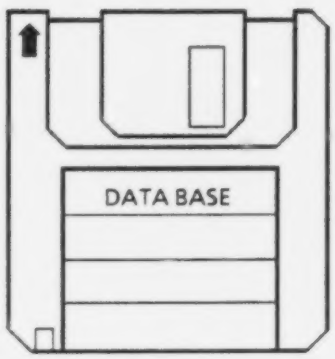
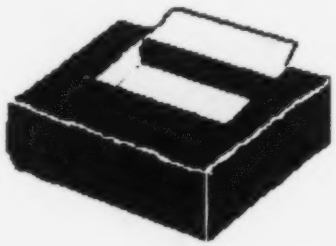


4. _____
( )



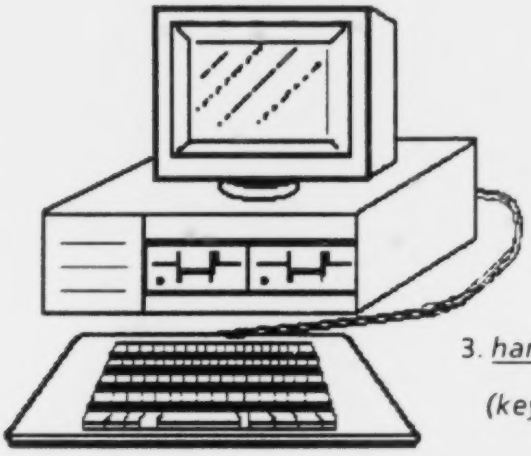
6. _____
( )

COMPETENCY

Differentiate between hardware and software.

ACTIVITY SHEET 2 Answers

Label the following components as hardware or software and place the name of the particular hardware or software device in parenthesis.



1. *hardware*

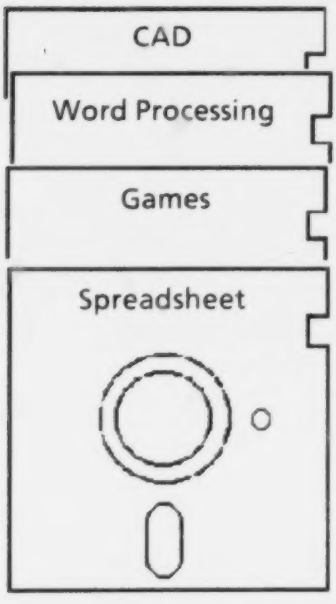
(CRT)

2. *hardware*

(disk drives)

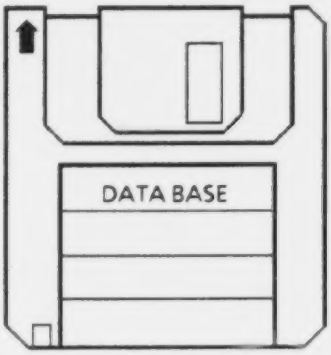
3. *hardware*

(keyboard)



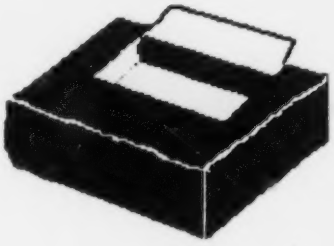
5. *software*

(5 1/4" disks)



4. *software*

(3 1/2" disk)



6. *hardware*

(printer)

COMPETENCY

Differentiate between hardware and software.

ACTIVITY SHEET 3

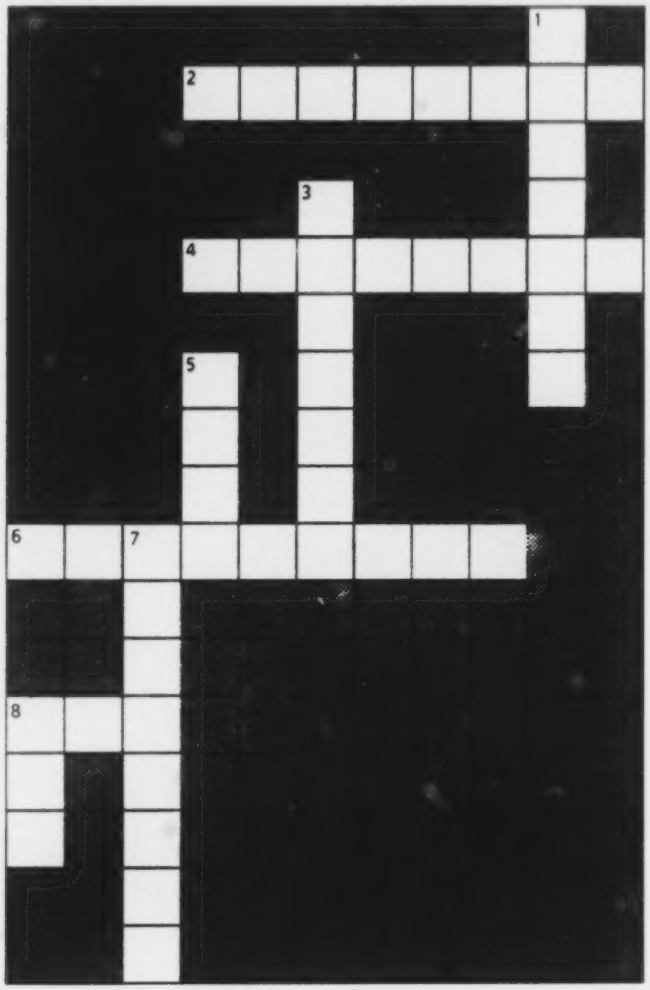
Insert answers to clues in the appropriately marked spaces.

ACROSS CLUES

2. Sends data to the CPU each time a key is struck.
4. The physical equipment of a computer system.
6. An auxiliary storage device.
8. Displays output on a screen.

DOWN CLUES

1. A set of instructions telling the computer what to do.
3. Prints output.
5. Data or instructions are recorded on this medium.
7. Computer programs are an example of this.
8. The device that does all the processing.



COMPETENCY

Differentiate between hardware and software.

ACTIVITY SHEET 3 Answers

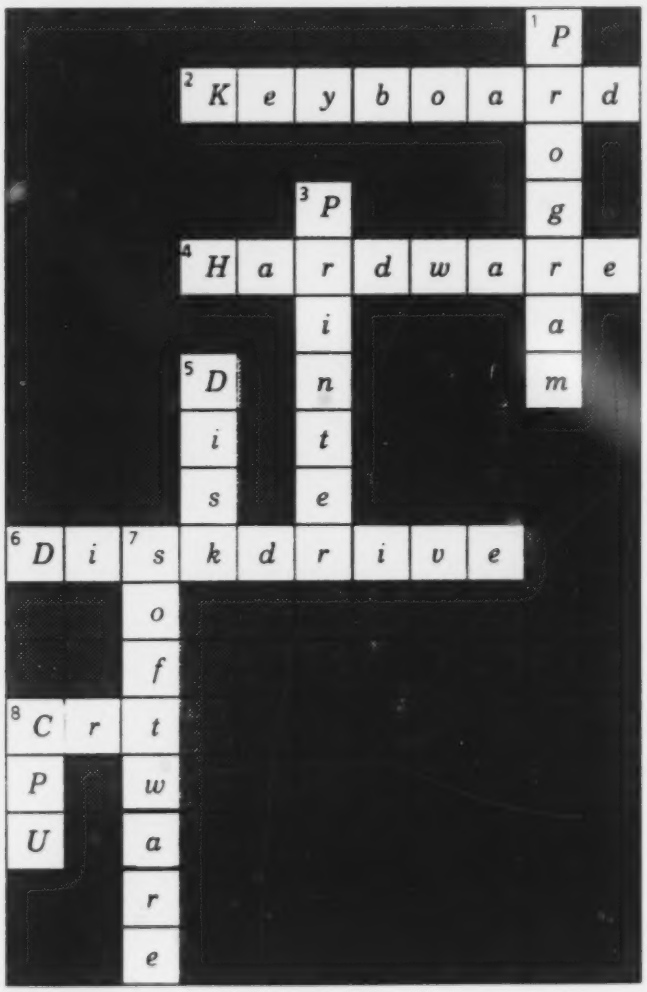
Insert answers to clues in the appropriately marked spaces.

ACROSS CLUES

2. Sends data to the CPU each time a key is struck.
4. The physical equipment of a computer system.
6. An auxiliary storage device.
8. Displays output on a screen.

DOWN CLUES

1. A set of instructions telling the computer what to do.
3. Prints output.
5. Data or instructions are recorded on this medium.
7. Computer programs are an example of this.
8. The device that does all the processing.



COURSE BASIC COMPUTER LITERACY

UNIT A

Introduction to the Computer

COMPETENCY

Identify the major components of a computer.

PERFORMANCE OBJECTIVE 4

Upon completion of the unit, the student will be able to identify and explain the functions of the major components of a microcomputer.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Information Sheet.
3. Mandell. **Introduction to Computers Using the IBM PC**, pp. 22-32.
4. Mackey. "Choosing a Computer System."

INSTRUCTIONAL ACTIVITIES

1. Discuss with the student the major components of a computer.
2. Instruct the student to identify the major components of a computer.
3. Instruct the student to explain the primary function of each component.

EVALUATION

The student will identify the components of a computer on Activity Sheet 1 and match the correct terms to the proper descriptions on Activity Sheet 2.

COMPETENCY

Identify the major components of a computer.

INFORMATION SHEET

Definitions:

1. Computer - an electronic machine that can store and process information entered by a computer operator, solve problems, and give information back to the operator.

2. Keyboard - an input device consisting of keys representing different letters, numbers, other symbols, and commands to a computer. The keyboard for a computer looks very much like the keyboard for an electric typewriter.

3. Hardware - computer machinery and equipment.

4. Monitor (CRT screen) - the TV like device that displays information to be processed or information that has been processed.

5. Printer - a device that provides the hard (paper) copy of processed information.

6. Disk Drive - a machine used to read and write data to/from magnetic disks during data transmission.

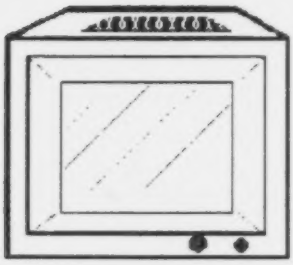
7. Central Processing Unit (CPU) - the "brain" of a computer. It interprets and executes instructions (between control unit and arithmetic/logic unit) and directs communications with input/output storage devices.

COMPETENCY

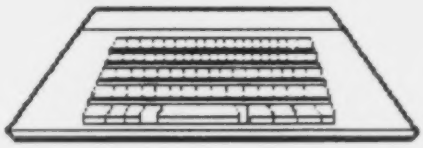
Identify the major components of a computer.

ACTIVITY SHEET 1

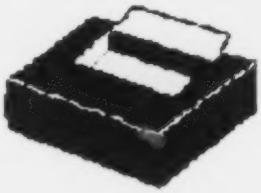
Fill in the blank beneath each illustration with the correct name of the part of the computer system shown.



1. _____



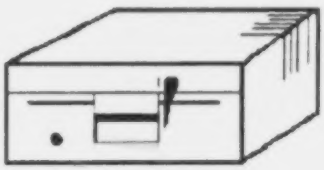
2. _____



3. _____

STORAGE	
CONTROL UNIT	ARITHMETIC LOGIC UNIT

4. _____



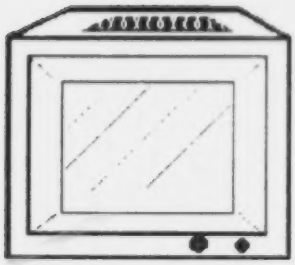
5. _____

COMPETENCY

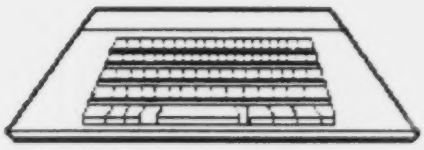
Identify the major components of a computer.

ACTIVITY SHEET 1 Answers

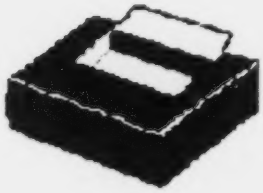
Fill in the blank beneath each illustration with the correct name of the part of the computer system shown.



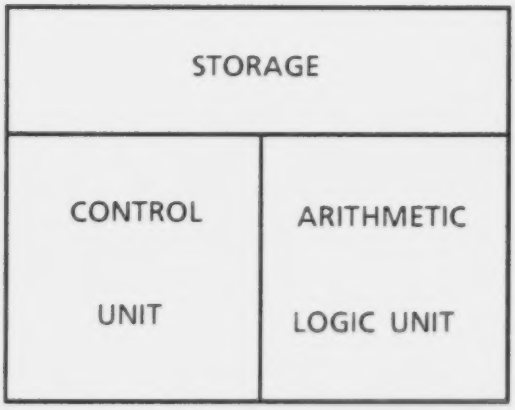
1. *monitor*



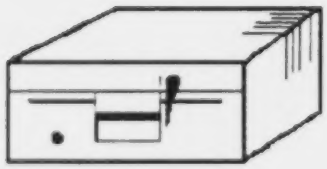
2. *keyboard*



3. *printer*



4. *CPU*



5. *disk drive*

COMPETENCY

Identify the major components of a computer.

ACTIVITY SHEET 2

Match each major component of a computer with its definition.

_____1.	Computer	a.	TV like device that displays information.
_____2.	Keyboard	b.	Machine that rotates magnetic disks.
_____3.	Hardware	c.	The "brain" of a computer.
_____4.	Monitor	d.	Contains the instructions that tell a computer what to do.
_____5.	Printer	e.	Computer machinery and equipment.
_____6	CPU	f.	An electronic machine that can store and process information.
		g.	An input device consisting of keys that are used to give commands to a computer.
		h.	A device that provides the hard (paper) copy of the processed information.

COMPETENCY

Identify the major components of a computer.

ACTIVITY SHEET 2 Answers

Match each major component of a computer with its definition.

f.	1.	Computer	a.	TV like device that displays information.
g.	2.	Keyboard	b.	Machine that rotates magnetic disks.
e.	3.	Hardware	c.	The "brain" of a computer.
a.	4.	Monitor	d.	Contains the instructions that tell a computer what to do.
h.	5.	Printer	e.	Computer machinery and equipment.
c.	6.	CPU	f.	An electronic machine that can store and process information.
			g.	An input device consisting of keys that are used to give commands to a computer.
			h.	A device that provides the hard (paper) copy of the processed information.

COURSE BASIC COMPUTER LITERACY

UNIT A

Introduction to the Computer

COMPETENCY

Demonstrate care and maintenance of equipment and materials.

PERFORMANCE OBJECTIVE 5

Upon completion of the unit, the student will be able to demonstrate proper care and maintenance of the major components of a microcomputer.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Owner's manual for brand of computer used.
3. User's guide for brand of computer used.
4. Owner's manual for brand of printer used.
5. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Assign the student to read the "Care and Maintenance" sections for the various components of an assigned personal computer.
2. Demonstrate to the student the proper care of the various components.
3. Discuss with the student the correct maintenance procedures for the equipment.
4. Assign the student to demonstrate proper care and maintenance of the various components.
5. Instruct the student to complete a Care and Maintenance Checklist for each component.

EVALUATION

The student will complete the Care and Maintenance Checklist.

COMPETENCY

Demonstrate care and maintenance of equipment and materials.

INFORMATION SHEET

The care and maintenance of computer equipment is an important part of using the equipment. Each company has very specific care and maintenance instructions; however, there are numbers of basic care/maintenance items that are common to all manufacturers and all components and might even be considered just plain "common sense." The following are some very basic "rules":

1. Never eat, drink, or smoke while working with computer equipment.
2. If there are problems with the equipment, always call a qualified service technician. (Besides taking the chance that the equipment may be damaged, there is the possibility that the warranty may be voided.)
3. Handle diskettes carefully.
   a. Do not fold or bend.
   b. Keep away from magnets.
   c. Do not touch exposed areas.
   d. Do not remove disk from drive when red light is on.
   e. Use soft, felt-tip pen to write on diskette label.
4. Use only an approved (by the manufacturer) disk cleaning procedure.
5. Always refer to the owner's manual for recommended care and maintenance of a specific piece of equipment.
6. Always follow the manufacturer's suggestions for moving the equipment (including saving the equipment boxes).

COMPETENCY

Demonstrate care and maintenance of equipment and materials.

ACTIVITY SHEET

CARE AND MAINTENANCE CHECKLIST

Directions: Observe student. Allow reasonable time to complete each item. An acceptable rating on each item is required for competency.

Items To Be Evaluated	RATING	
	Acceptable	Unacceptable
A. Computer 1. Wiped cabinet with soft cloth.		
2. Kept food/drink away from computer and keyboard.		
3. Allowed sufficient airflow around computer.		
B. Monitor 1. Wiped screen periodically with soft cloth and used a glass cleaner.		
2. Kept unit free from vibration and dust.		
C. Printer 1. Kept unit on even, stable surface.		
2. Did not print without ribbon or paper.		
3. Kept unit free from dust and out of sunlight.		
D. Disk Drive 1. Cleaned disk drive heads as directed in manual.		
2. Used proper solution to clean heads.		

STUDENT'S NAME _____ DATE _____

EVALUATED BY _____

COURSE BASIC COMPUTER LITERACY

UNIT A

Introduction to the Computer

COMPETENCY

Define computer languages and terms.

PERFORMANCE OBJECTIVE 6

Following class discussion, the student will be able to identify and define computer languages and terms.

INSTRUCTIONAL RESOURCES

1. Clark and Lambrecht. **Information Processing**, pp. 162-65.
2. Brenan and Mandell. **Introduction to Computers and BASIC Programming**, pp. 69-75.
3. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Assign the student to read the Information Sheet.
2. Review and discuss the contents of the Information Sheet, emphasizing computer languages and terms.
3. Instruct the student to complete the Activity Sheets.
4. Review and discuss answers to the Activity Sheets.
5. Invite an educator who is familiar with computers in education to discuss computer languages and terms.

EVALUATION

The student will match the correct computer languages and terms with the appropriate answers.

COMPETENCY

Define computer languages and terms.

INFORMATION SHEET

All programs are written in a computer language. Many different languages are available today. There are three levels of language: machine, assembly, and high-level language.

Machine language is the only language that is directly understood by the processor (CPU). Computer instructions written in machine language are written in binary as a series of 1's and 0's. This is the most difficult programming language.

Assembly language is a little easier to understand and use than machine language. The programs are written in alphabetical terms using short abbreviations. Some of the terms that can be used are PRT (Print), MUV (Move), STP (Stop), and COM (Compare). Before the computer can understand these assembly language terms, they must be translated into machine language. A program called an assembler is used to perform this translation process.

To help make programming easier, high-level languages were developed. These languages are designed to use English and English-like terms. Before the computer can execute these English-like statements, the statements must be translated by special programs into machine language. There are two ways this can be accomplished. It can be done with a compiler or an interpreter. An interpreter program translates one instruction at a time into machine language, whereas a compiler program will translate the entire program at one time into machine language. These translation programs may be provided by the publisher.

Some of the more commonly used high-level languages are as follows:

1. BASIC (Beginner's All-Purpose Symbolic Instruction Code)--considered the most popular of all computer languages used in education.

2. COBOL (COmmon Business Oriented Language)--designed to be used with business applications.

3. FORTRAN (FORmula TRANslator)--regarded as the oldest high-level language. It is used for complex math and scientific applications.

4. RPG (Report Program Generator)--designed to produce business reports.

5. Pascal--developed to teach programming concepts to students.

6. Logo--considered a popular language for elementary age children. It is used to teach mathematical concepts such as distance, angles, and shapes.

COMPETENCY

Define computer languages and terms.

ACTIVITY SHEET 1

JEOPARDY

Fill in the blanks with the correct response.

1. The only language a computer can understand.
   What is _____?
2. Two programs that will translate a high-level language into machine language.
   What are _____ and _____?
3. It is the most popular language used in education.
   What is _____?
4. The language written in alphabetical terms using short abbreviations.
   What is _____?
5. The oldest high-level language.
   What is _____?
6. The high-level language designed for business applications.
   What is _____?
7. This program will translate assembly language into machine language.
   What is _____?
8. A high-level language designed to produce reports.
   What is _____?
9. A high-level language designed to teach programming concepts to students.
   What is _____?
10. A translation program that translates one statement at a time.
    What is _____?
11. A high-level language used to teach mathematical concepts to children.
    What is _____?
12. A translation program that translates the entire program at one time.
    What is _____?

COMPETENCY

Define computer languages and terms.

ACTIVITY SHEET 1 Answers

JEOPARDY

Fill in the blanks with the correct response.

1. The only language a computer can understand.
   What is *machine language*?

2. Two programs that will translate a high-level language into machine language.
   What are *compilers* and *interpreters*?

3. It is the most popular language used in education.
   What is *BASIC*?

4. The language written in alphabetical terms using short abbreviations.
   What is *assembly*?

5. The oldest high-level language.
   What is *FORTRAN*?

6. The high-level language designed for business applications.
   What is *COBOL*?

7. This program will translate assembly language into machine language.
   What is *assembler*?

8. A high-level language designed to produce reports.
   What is *RPG*?

9. A high-level language designed to teach programming concepts to students.
   What is *Pascal*?

10. A translation program that translates one statement at a time.
    What is *interpreter*?

11. A high-level language used to teach mathematical concepts to children.
    What is *Logo*?

12. A translation program that translates the entire program at one time.
    What is *compiler*?

COMPETENCY

Define computer languages and terms.

ACTIVITY SHEET 2

Match the definitions with the correct computer language terms.

_____ 1. A high-level language used in education.

_____ 2. A translator that translates the entire program at one time.

_____ 3. A high-level language used in businesses.

_____ 4. A language written in 1's and O's.

_____ 5. A high-level language used for children.

_____ 6. A translator that translates one statement at a time.

_____ 7. A high-level language used to produce reports.

_____ 8. A high-level language used for complex math and scientific applications.

_____ 9. A language written in alphabetical terms using short abbreviations.

_____ 10. A high-level language used to teach programming concepts to students.

a. RPG
b. BASIC
c. Interpreter
d. Logo
e. Compiler
f. COBOL
g. Pascal
h. FORTRAN
i. Machine
j. Assembly

COMPETENCY

Define computer languages and terms.

ACTIVITY SHEET 2 Answers

Match the definitions with the correct computer language terms.

b.	1.	A high-level language used in education.	a. RPG b. BASIC c. Interpreter d. Logo e. Compiler f. COBOL g. Pascal h. FORTRAN i. Machine j. Assembly
e.	2.	A translator that translates the entire program at one time.	
f.	3.	A high-level language used in businesses.	
i.	4.	A language written in 1's and O's.	
d.	5.	A high-level language used for children.	
c.	6.	A translator that translates one statement at a time.	
a.	7.	A high-level language used to produce reports.	
h.	8.	A high-level language used for complex math and scientific applications.	
j.	9.	A language written in alphabetical terms using short abbreviations.	
g.	10.	A high-level language used to teach programming concepts to students.	

COMPUTER OPERATIONS

COURSE BASIC COMPUTER LITERACY

UNIT B

Computer Operations

COMPETENCY

Perform power on/off sequence.

PERFORMANCE OBJECTIVE 7

The student will perform the power on/off sequence as demonstrated by the instructor.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Owner's manual for brand of computer used.
3. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Instruct the student to locate the power switch on the computer.
2. Demonstrate to the student the method of turning the power on and off.
3. Assign the student to demonstrate the correct method of performing the power on/off sequence.

EVALUATION

The student will perform the power on/off sequence in the correct manner as directed by the instructor.

COMPETENCY

Perform power on/off sequence.

INFORMATION SHEET

Each computer has unique characteristics regarding power switches, more commonly known as "on-off" switches. Most computers have simple toggle or push-button type switches located in places that they are not likely to be turned on or off by accident. Usually they are located on the back or toward the back on the side of the computer. When working with students, it is recommended that the instructor provide guidance in locating the switch and actually turning on or off the machine. This will allow the entire class to remain together and speed along to actual use of the computer.

COMPETENCY

Perform power on/off sequence.

ACTIVITY SHEET

Each computer has its own peculiarities, one of which is how to start the computer. Follow instructor's directions to properly start an assigned computer.

1. Locate the power switch.
2. Locate the disk drive (and switch/lever or button if so equipped).
3. Locate the monitor switch, if so equipped.
4. Wait for teacher instruction before turning anything on.

Answers

All answers will be checked as the teacher demonstrates the proper method of turning on and off the computer, as well as the final check when the student must do the procedure for the teacher.

COURSE BASIC COMPUTER OPERATIONS

UNIT B

Computer Operations

COMPETENCY

Demonstrate keyboarding skills for computer operations.

PERFORMANCE OBJECTIVE 8

Following explanation and practice, the student will be able to demonstrate the purposes and operations of the keys.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Computer operating manual.
3. Information Sheets.

INSTRUCTIONAL ACTIVITIES

1. Provide the student with a handout on the keyboard that will be used.
2. Explain and demonstrate the purposes and operations of the keys.
3. Instruct the student to complete Activity Sheet 2.
4. Instruct the student to use commercially developed software (available from various publishing companies) to develop keyboarding skills.
5. Assign the student to key in short programs from a textbook, computer magazine, or personal material and check for accuracy.
6. Demonstrate the primary use of the special keys.
7. Instruct the student to identify the special keys on the keyboard.

EVALUATION

The student will complete Activity Sheet 2. This may be accomplished by having the students work in pairs. One student will read the instructions; the other will work at the keyboard. After the first student completes the exercise, they will change positions. Both students will sign and date their Activity Sheets and turn them in to the teacher for credit.

COMPETENCY

Demonstrate keyboarding skills for computer operations.

INFORMATION SHEET

The computer keyboard has alphabetical keys, numerical keys, special character keys, and function keys. A keyboard and computer may be used to develop keyboarding skills. This can be accomplished through various keyboarding activities such as programs to type, teacher-made activities, commercially produced software for development of keyboarding skills, and drills. The software packages usually provide computer feedback with questions and speed and accuracy rates.

The basic computer keyboard is very similar in appearance to the normal typewriter. In addition to the special keys, most computer keyboards will have keyboard "rollover" capability and auto-repeat. "Rollover" capability simply means that several keys may be pressed simultaneously and they will be registered in sequence. The keys will not jam as they might with a normal typewriter. Auto-repeat means that when a key is held down, it will repeat until it is released.

Definitions:

control/CTRL (or CNTRL)	- Has no function by itself; is used to change other keys into application dependent, special function keys.
alternate/ALT	- Similar function as the Control Key.
print screen/PRTSC (or PRINT)	- Sends copy of the screen to the printer.
insert/INS	- Application dependent; usually used to overwrite characters in an existing line or displace (move) them. Activate or deactivate by pressing key.
escape/ESC	- Usually application dependent.
delete/DEL	- Application dependent; normally will delete the character that the cursor is positioned on.
end/END	- Application dependent; usually moves the cursor from its present position to the last character in the same line.
page up/PG UP	- Application dependent; usually used to display the previous screen page.
page down/PG DN	- Application dependent; usually used to display the next screen page.
numeric lock/NUM LOCK	- Changes keys to numeric code; activate or deactivate by pressing key.
scroll lock/SCROLL LOCK (HOLD)	- Used in combination with the control key to scroll through a document page by page.

Special Combinations

CTRL + ALT + DEL	- When pressed simultaneously, will restart the computer--sometimes called a "warm boot."
SHIFT + PRTSC	- Copy of screen sent to printer.
CTRL + NUM LOCK	- Stops the screen so that you can take your time reading page.

COMPETENCY

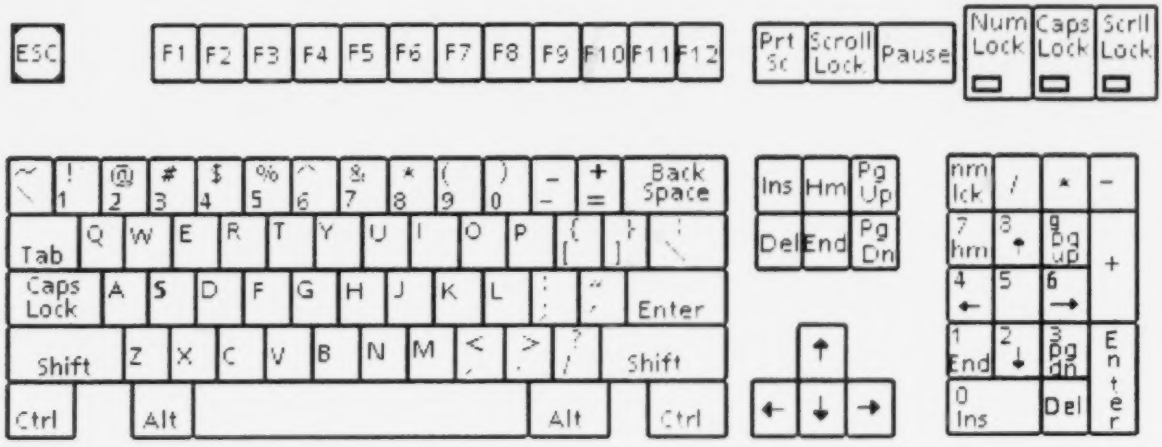
Demonstrate keyboarding skills for computer operations.

ACTIVITY SHEET 1

Familiarize yourself with a keyboard by studying a copy from the computer manual that your class will use. Below is an example of the IBM PS/2 keyboard. Other styles include the AT style, Apple, Tandy, and Macintosh keyboards.

Example:

IBM PS/2 Keyboard



COMPETENCY

Demonstrate keyboarding skills for computer operations.

ACTIVITY SHEET 2

Complete the following keyboard exercises.

1. Perform power-up procedures as directed by the teacher.

2. Enter Date.

3. Enter Time.

4. At the **A>** prompt, key **BASIC** and press the Enter Key.

*5. Key in **PRINT**, quotation mark, your first and last name in lower case letters , quotation mark and press the Enter Key. (For example: PRINT "john smith") *Note, **PRINT "_____"** must precede all entries in items **5** through **32**.*

6. Press the Caps Lock Key and key your first and last name in upper case letters. Press Caps Lock Key again.

7. Using the Shift Key, key the first letter of your first name and last name in upper case letters and the others in lower case letters. Press the Enter Key.

8. Key the following symbols and numbers: ***) (4 5 $ # 21**. Be sure to use the Shift Key to key in the symbols. Press the Enter Key.

9. Key in your social security number using the top row keys of the keyboard and press the Enter Key.

10. Press the Caps Lock Key, key your name in upper case letters, space and key your social security number using the numbers on the top row of the keyboard, and press the Enter Key.

11. Press the Num Lock Key (on some computers a light, red or green, will indicate it is on), key in your social security number (using the Numeric Key Pad), and press the Enter Key.

12. Press the Num Lock Key again to turn it off. Press each Arrow Key and watch the cursor move around the screen. Return the cursor to the left margin.

13. Key in this sentence: **Mary will see.** Then move the cursor using the Arrow Key so it is under the letter **s**; press the Insert Key and key in the word **not** and a space. Press the Enter Key.

14. Key in the appropriate command to clear the screen. For example, in MS-DOS, key in **CLS** and press the Enter Key to clear the screen.

COMPETENCY

Demonstrate keyboarding skills for computer operations.

ACTIVITY SHEET 2 continued

15. Key the sentence **Mary will not sea.** Press the Backspace Key three times, erasing **" . a .** Key in **e ."** and press the Enter Key.

16. Move the cursor using the Arrow Key so it is under the letter **n** and press the Delete Key four times to erase the word **not.** Notice how the word **see** moves back as you press the Delete Key. Press the Enter Key.

17. Press the Tab Key and key in **Blue**. Press the Tab Key and key the word **Red**. Notice how the Tab Key causes the cursor to jump five spaces at a time.

18. Clear the screen.

19. Key the following words and press the Tab Key once after each word:

    Cat Dog Bird Fish Cow

20. Press the Home Key and the cursor will return to home position, which is located in the upper left-hand corner of the screen.

21. Press the Enter Key five times.

22. While holding down the Alt Key, key the letter **p**. Release both keys. The word **Print** should appear on the screen. Press the Enter Key.

23. Key the number **10**, space once, and while holding down the Alt Key, key the letter **p**. Complete keying this program:

    ```
    10 PRINT "Data Processing"
    20 PRINT "Hello"
    30 GOTO 10
    ```

24. You have keyed in a program. Press the Special Function Key **F2** to execute the program.

25. Notice the program will not stop scrolling (that is, rolling on the screen). To make it stop, hold down the Control Key and press the Pause or Scroll Lock Key. *Note: If you had keyed in **END** instead of **GOTO**, the program would print only one time.*

26. Press the **F2** key to start or execute the program again.

27. Press the Control Key and the Pause or Scroll Lock Key again and the screen will freeze. Press **F2** and it will resume execution of the program.

28. Stop execution of the program.

COMPETENCY

Demonstrate keyboarding skills for computer operations.

ACTIVITY SHEET 2 continued

29. Hold down the Control Key and press the Home Key. The screen will clear and the cursor will return to the home position in the upper left-hand corner of the screen. Press the Enter Key three times.

30. Key **Edit 20** and press the Enter Key.

31. Notice that the number 20 of the program (see number 24) previously keyed in appears. Press the End Key. Notice how the cursor moves to the end of the line. Backspace one time to remove the " ; space once and key in **Dolly "** and press the Enter Key.

32. Make sure the printer is on. While holding down the **F12** key, press the Print Screen Key to print the new program.

33. Re-boot the system by depressing CTRL, ALT and DEL as directed by the teacher. To re-boot the system means to start the machine without having to turn it OFF and then ON again.

34. Remove the diskette and place it in the file folder.

35. Perform the power-off sequence as instructed.

(This keyboard exercise may be adapted for use with any brand of computer.)

COMPETENCY

Demonstrate keyboarding skills for computer operations.

ACTIVITY SHEET 3

Fill in the blank(s) with the correct description or abbreviation.

1. restart computer _____ + _____ + _____
2. PG UP _____
3. insert _____
4. "warm boot" _____
5. ESC _____
6. auto-repeat _____
7. CTRL + NUM LOCK _____
8. END _____
9. PRTSC _____
10. alternate _____

COMPETENCY

Demonstrate keyboarding skills for computer operations.

ACTIVITY SHEET 3 Answers

Fill in the blank(s) with the correct description or abbreviation.

1.	restart computer	*CTRL + ALT + DEL*
2.	PG UP	*page up--display previous page*
3.	insert	*INS-overwriting or moving characters*
4.	"warm boot"	*restart computer (control + alt + del)*
5.	ESC	*escape--depends on application*
6.	auto-repeat	*depressed key repeats as long as it is held down*
7.	CTRL + NUM LOCK	*stops the screen from scrolling*
8.	END	*depends on application; most times it will move cursor to end of line*
9.	PRTSC	*copies screen to printer*
10.	alternate	*no function by itself; used to change other keys*

COMPETENCY

Demonstrate keyboarding skills for computer operations.

ACTIVITY SHEET 4

DEMONSTRATING KEYBOARDING SKILLS CHECKLIST

Directions: Observe student. Allow reasonable time to complete each competency. An acceptable rating on each item is required for competency.

Activity	RATING	
	Acceptable	Unacceptable
1. ALTERNATE KEY (Alt) Used with another key to do a certain function.		
2. BACKSPACE KEY Moved cursor backward to erase.		
3. BOOT SYSTEM Used appropriate keys to restart computer.		
4. CONTROL KEY (Ctrl) Used with another key to do a certain function.		
5. CURSOR KEYS (Arrow) Moved cursor to right, left, up, and down.		
6. DELETE KEY (Del) Erased characters, words, and/or lines.		
7. END KEY Moved cursor to last character on current line.		
8. ENTER KEY Told computer to process what had been typed.		
9. ESCAPE KEY (Esc) Used to exit a program.		
10. HOME KEY Moved cursor to home position.		
11. INSERT KEY (Ins) Inserted characters, words, and/or lines.		

COMPETENCY

Demonstrate keyboarding skills for computer operations.

ACTIVITY SHEET 4 continued

DEMONSTRATING KEYBOARDING SKILLS CHECKLIST

Directions: Observe student. Allow reasonable time to complete each competency. An acceptable rating on each item is required for competency.

Activity	RATING	
	Acceptable	Unacceptable
12. NUM LOCK KEY Activated the numerical pad.		
13. PRINT SCREEN KEY Caused computer to print the data on the screen.		
14. SHIFT KEY Held shift key all the way down as letter key or special character key was struck.		
15. SHIFT LOCK Caused computer to type in upper-case letters.		
16. TAB KEY Caused cursor to jump a certain number of spaces at once.		

STUDENT'S NAME _____ DATE _____

EVALUATED BY _____

COURSE BASIC COMPUTER LITERACY

UNIT B

Computer Operations

COMPETENCY

Prepare diskette to accept information.

PERFORMANCE OBJECTIVE 9

Following class discussion and hands-on experience, the student will be able to prepare a diskette to accept information.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Mandell. **Introduction to Computers Using the IBM PC**, pp. 184-85.
3. Shelly and Cashman. **Computer Fundamentals for an Information Age**, p. 95.
4. Computer operating manual.
5. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Assign the student to read the Information Sheet.
2. Review and discuss with the student the contents of the Information Sheet.
3. Demonstrate how a diskette is divided into tracks and sectors.
4. Demonstrate the step-by-step procedure for preparing a diskette to accept information on the computer system that is to be used.
5. Assign the student to practice preparing a diskette to accept information.

EVALUATION

The student will prepare a diskette to accept information.

COMPETENCY

Prepare diskette to accept information.

INFORMATION SHEET

The process of preparing a diskette to accept information is called either formatting or initializing. A brand new diskette is completely blank, and it must be formatted or initialized before it can accept programs and/or data for future use. During the preparation process, the diskette is divided into tracks and sectors. The entire diskette is also analyzed for any defective tracks during this process. The number of tracks and sectors will depend upon the type of diskette and equipment being used. Generally, a 5 1/4" diskette is divided into 40 tracks with eight or nine sectors, and a 3 1/2" diskette is divided into 80 tracks with eight or nine sectors. The computer will write data and/or programs along the concentric circles called tracks.

A used diskette can be reformatted or reinitialized so that its old contents are removed and new programs and/or data can be stored on it. Since the preparation process erases and permanently destroys all information on the diskette, the user must be careful not to format or initialize a diskette containing important or needed data. It is possible to prevent accidental loss of data by placing special tabs over the notch on the side of the disk (not shown on the following illustration). This notch is generally known as the write-protect cutout (or notch), and the tab is usually referred to as the write-protect tab.

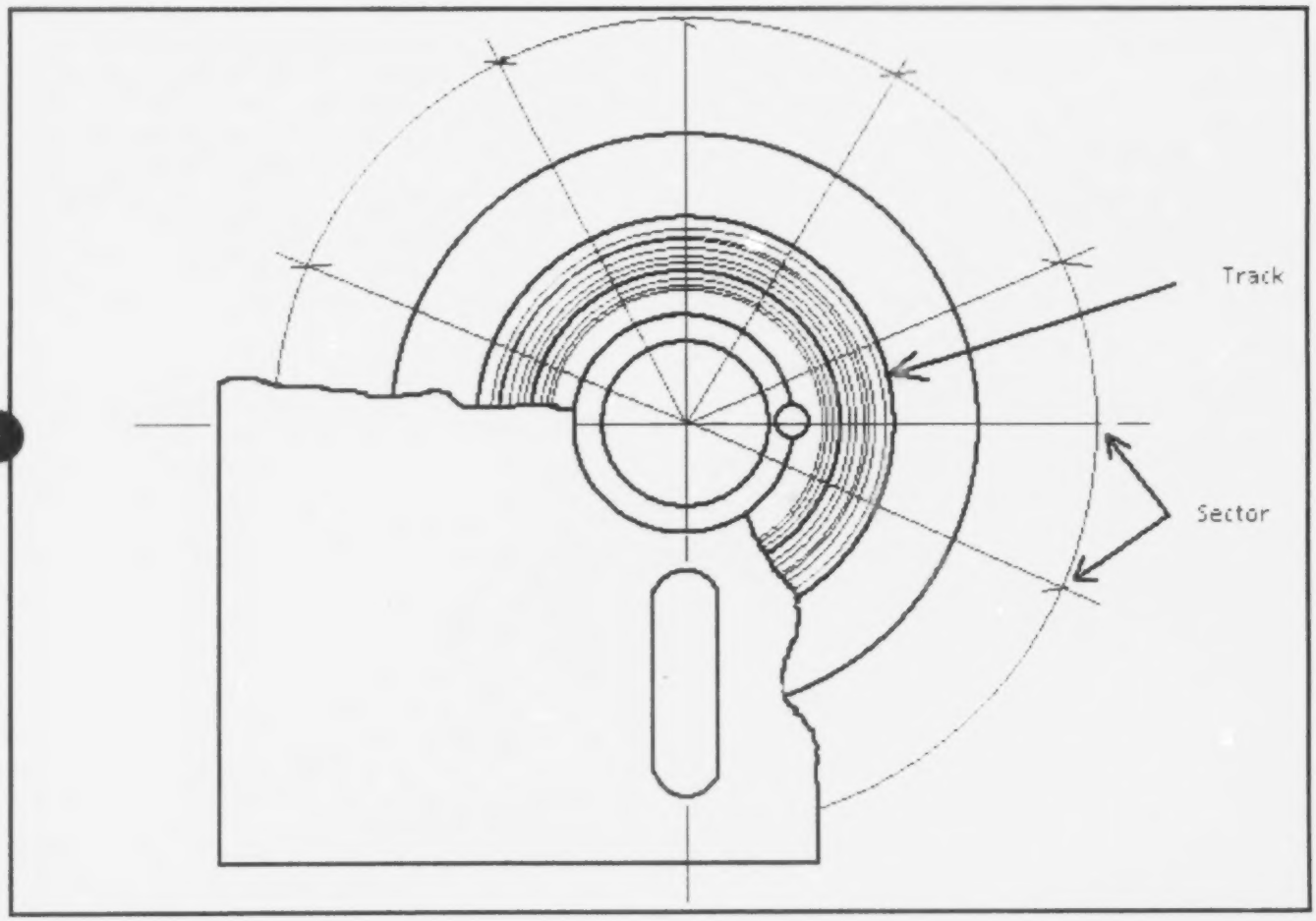
The procedure for preparing a diskette varies from one computer brand to another. The step-by-step instructions for preparing a diskette can be found in the computer operating manual.

COMPETENCY

Prepare diskette to accept information.

ACTIVITY SHEET 1

Demonstrate how a diskette is divided into tracks and sectors.



COMPETENCY

Prepare diskette to accept information.

ACTIVITY SHEET 2

Demonstrate the step-by-step procedure for preparing a diskette.

COMPETENCY

Prepare diskette to accept information.

ACTIVITY SHEET 3

Practice preparing a diskette to accept information.

COURSE BASIC COMPUTER LITERACY

UNIT B

Computer Operations

COMPETENCY

Initiate load/run and store/retrieve operations.

PERFORMANCE OBJECTIVE 10

Upon completion of the unit, the student will be able to initiate load/run and store/retrieve operations.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Mandell. **Introduction to Computers Using the IBM PC,** Chapter 7.
3. Florida Department of Education. **Computer Literacy For Vocational Exploration Programs: A Teacher's Guide.**
4. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Discuss with the student the definitions on the Information Sheet.
2. Demonstrate to the student the correct method of loading a simple word processing program.
3. Demonstrate to the student the operation of a word processing program, how to save documents, and how to retrieve documents.
4. Assign the student to demonstrate the correct method of loading a simple word processing program.
5. Instruct the student to use a word processing program, to create and save a document, and to retrieve a document.

EVALUATION

The student will complete the Evaluation Checklist.

COMPETENCY

Initiate load/run and store/retrieve operations.

INFORMATION SHEET

Definitions:

Load program	-- after system is started (or booted) special program (word processing, spreadsheet, etc.) is initiated by proper starting code such as "word," "ww," 1-2-3, etc., from hard drive or floppy drive
Run program	-- after program such as a word processing program is started, select menu and proceed with word processing
Store data	-- retaining data for future reference
Retrieve data	-- recovering stored data and/or information
Menu	-- listing (or pictures) of the selection options of a program available to a user
File	-- text numbers and graphic material stored on disk with appropriate name--similar to paper file
Save	-- copying of a file to a disk or tape

COMPETENCY

Initiate load/run and store/retrieve operations.

ACTIVITY SHEET 1

Load the word processing program as instructed by your teacher and insert a formatted disk in drive A or B, depending on the system you have. Key in the following :

> The average number of electronic components packed on a silicon chip doubled each year after 1965. Late in 1969, an Intel engineer named Marcian "Ted" Hoff presented his design ideas for a microprocessor chip to representatives from a Japanese calculator company.

Save this information under the file name "computer," using the procedure outlined by your teacher. Exit the program as instructed--be sure to remove your data (or file) disk. Re-boot the computer using the "warm-boot" procedure. Load the word processing program and insert your data disk into the correct drive. Retrieve (or load) the file named "computer" as instructed by your teacher. Read the file to be sure it is the correct file and add the following:

> Pluck a hair. It is roughly 100 microns in diameter. Imagine putting a grid of 400 transistors, each made of lines as narrow as a single micron, on a piece of silicon the size of the end of that hair!

Save this file and exit the program.

COMPETENCY

Initiate load/run and store/retrieve operations.

ACTIVITY SHEET 2

EVALUATION CHECKLIST

Directions: Observe student. Allow reasonable time to complete each competency. An acceptable rating on each item is required for competency.

ITEM	RATING	
	Acceptable	Unacceptable
1. Inserted blank disk.		
2. Formatted blank disk.		
3. Ran program.		
4. Created file.		
5. Saved file.		
6. Exited program.		
7. Re-booted system (with "warm boot" method).		
8. Retrieved file.		
9. Reviewed file.		
10. Saved file.		
11. Exited program and shut computer down.		

STUDENT'S NAME _____ DATE _____

EVALUATED BY _____

COURSE BASIC COMPUTER LITERACY

UNIT B

Computer Operations

COMPETENCY

Explain the effects of power interruptions.

PERFORMANCE OBJECTIVE 11

Following class discussion, the student will explain the effects of power interruptions.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Assign the student to review the Information Sheet on problems with power interruptions.
2. Instruct the student to turn the computer off to simulate a power interruption before saving information, get information back on the screen or exit a program without saving the information, and attempt to retrieve the information.

EVALUATION

The student will explain the basic problems with power interruptions as listed on the Information Sheet.

COMPETENCY

Explain the effects of power interruptions.

INFORMATION SHEET

Forms of power interruptions:

1. Power fluctuations--Can be caused by surges on the power line. Best control is to use a surge protector. Problems that may occur include the following: data rearranged, boot track of disk damaged, and file allocation table not accurate.

2. Power outage--May cause loss of information because information was not saved prior to outage.

3. Moisture--Liquids such as soft drinks and coffee can fuse circuits in the machine, causing permanent damage.

COMPETENCY

Explain the effects of power interruptions.

ACTIVITY SHEET

Enter a small amount of information in the computer. Without saving this information, exit the program by using the "warm boot." After the teacher is satisfied that you have exited, load the program and try to retrieve your information. What happens?

Answer

Each student should have lost the information entered in the computer.

UNDERSTANDING SOFTWARE APPLICATIONS

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Business Software Applications

COMPETENCY

Explain the use of a word processing program.

PERFORMANCE OBJECTIVE 12

Following class discussion, the student will be able to explain and identify the main features of a word processing program.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Brenan and Mandell. **Introduction to Computers and BASIC Programming**, p. 394.
3. Clark and Lambrecht. **Information Processing**, p. 162.
4. Mandell. **Introduction to Computers Using the IBM PC**, pp. 304-7.
5. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Assign the student to read the Information Sheet.
2. Review and discuss with the student the contents of the Information Sheet.
3. Assign the student to complete the Activity Sheets.
4. Review and discuss the answers to the Activity Sheets.
5. Assign the student to work with a word processing program.

EVALUATION

The student will match features of a word processing program with appropriate explanations.

COMPETENCY

Explain the use of a word processing program.

INFORMATION SHEET

Since a word processing program is used to write documents such as letters, memos, term papers, reports, etc., a simple definition for word processing would be writing with a computer. This software enables a computer to become a typewriter with more capabilities than a standard typewriter. The most important capability is that a document can be keyed once, corrections made, and text rearranged, inserted, and/or deleted before it is printed or stored on a diskette for later use.

The main features of most word processing software packages are described below:

1. Automatic centering enables the computer to center lines of text by pressing one or two keys.

2. Block movement enables the computer to move, copy, save, or delete blocks of text (a phrase, sentence, or paragraph).

3. Character enhancement lets the computer underline, boldface, italicize, superscript, and/or subscript characters as they are printed.

4. Line spacing allows the document to be single-spaced, double-spaced, or triple-spaced. With some word processing programs the screen will display only the single spacing, but the printer will print the document double-spaced or triple-spaced.

5. Margin setting provides a clear border, top, bottom, and sides around the text material. Also, some word processing software will allow for right justification (all lines ending flush, or even, with the right margin).

6. Pagination enables the computer to automatically number the pages of each printed document.

7. Scrolling allows the user to move text on and off the screen. This is because the screen is usually not large enough to display an entire document.

8. Search and find allows the user to locate a specific character string (word, words, or phrase).

9. Search and replace allows the user to locate a specific character string and substitute it with a different character string.

COMPETENCY

Explain the use of a word processing program.

INFORMATION SHEET continued

10. Spelling check or spell check enables the computer to go through the entire document and check each word against a list of correctly spelled words in the dictionary. If a word is not in the dictionary, the computer will call this word to the attention of the user. The user must then decide if the word is correct or if a correction is needed. Most programs will let you add words to the dictionary.

11. Tab setting provides convenient points at which to align columns. Some word processing programs also have a decimal tab which enables the user to line up columns with a decimal point.

12. Word wrap causes the last word to move to the next line when it goes past the right margin, thus eliminating the need to press the enter/return key, except at paragraph endings.

With the technological advances of hardware and software in the years to come, word processing programs will become more sophisticated and more features will be added.

The hardware requirements are keyboard, display screen, CPU, storage device, and printer.

COMPETENCY

Explain the use of a word processing program.

ACTIVITY SHEET 1

Write the feature that best fits the description, using one letter to a blank. One character of the feature is already given.

1. W _ _ _ _ _ _ _ _
2. _ _ O _ _ _ _ _ _ _ _ _ _ _ _
3. _ _ _ R _ _ & _ _ _ _
4. D _ _ _ _ _ _ _ _ _
5. _ _ _ _ _ P _ _ _ _ _
6. _ _ R _ _ _ _ _ _ _ _ _ _ _ _
7. _ _ _ O _ _ _ _ _
8. _ _ _ _ _ C _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
9. _ _ E _ _ _ _ _ _ _ _ _ _ _ _ _
10. S _ _ _ _ _ & _ _ _ _ _ _ _ _
11. _ _ _ S _ _ _ _ _ _ _
12. _ _ _ _ _ _ _ I _ _ _ _ _ _ _ _ _ _ _ _
13. _ N _ _ _ _ _ _ _ _ _
14. _ _ G _ _ _ _ _ _ _

1. Causes a word to be moved to the next line when the right margin is reached.
2. Causes a paragraph to be moved, erased, saved, or copied.
3. Looks for a word and locates the word.
4. Contains a list of words.
5. Sets single-spacing, double-spacing, and triple-spacing.
6. Sets spacing for top and bottom and/or line length.
7. Moves text on and off the screen.
8. Permits underlining, boldfacing, and superscripting.
9. Looks for words.
10. Looks for a word and replaces it with another word.
11. Permits user to indent a paragraph.
12. Centers a line.
13. Enhances a character, word, etc.
14. Numbers the pages of a document.

COMPETENCY

Explain the use of a word processing program.

ACTIVITY SHEET 1 Answers

Write the feature that best fits the description, using one letter to a blank. One character of the feature is already given.

1. WORD WRAP
2. BLOCK MOVEMENT
3. SEARCH & FIND
4. DICTIONARY
5. LINE SPACING
6. MARGIN SETTINGS
7. SCROLLING
8. CHARACTER ENHANCEMENT
9. SPELLING CHECKER
10. SEARCH & REPLACE
11. TAB SETTINGS
12. AUTOMATIC CENTERING
13. UNDERLINING
14. PAGINATION

1. Causes a word to be moved to the next line when the right margin is reached.
2. Causes a paragraph to be moved, erased, saved, or copied.
3. Looks for a word and locates the word.
4. Contains a list of words.
5. Sets single-spacing, double-spacing, and triple-spacing.
6. Sets spacing for top and bottom and/or line length.
7. Moves text on and off the screen.
8. Permits underlining, boldfacing, and superscripting.
9. Looks for words.
10. Looks for a word and replaces it with another word.
11. Permits user to indent a paragraph.
12. Centers a line.
13. Enhances a character, word, etc.
14. Numbers the pages of a document.

COMPETENCY

Explain the use of a word processing program.

ACTIVITY SHEET 2

Match the terms with the correct definitions.

_____ 1. Numbers the pages.

_____ 2. Moves text on and off the screen.

_____ 3. Eliminates the need to press the enter/return key.

_____ 4. Moves, copies, saves, or deletes a paragraph.

_____ 5. Permits boldfacing, italicizing, underlining, superscripting, and subscripting.

_____ 6. Places text in the middle of the paper and/or screen.

_____ 7. Searches for spelling errors.

_____ 8. Looks for and locates a particular character string.

_____ 9. Causes the cursor to jump several spaces at once.

_____ 10. Allows a document to be single-spaced, double-spaced, or triple-spaced.

_____ 11. Looks for and writes over a character string with another character string.

_____ 12. Determines how long a line will be.

a. Block movement
b. Word wrap
c. Search and find
d. Scroll
e. Line spacing
f. Automatic centering
g. Pagination
h. Character enhancement
i. Search and replace
j. Tab setting
k. Spelling check
l. Margin setting

COMPETENCY

Explain the use of a word processing program.

ACTIVITY SHEET 2 Answers

Match the terms with the correct definitions.

g. 1. Numbers the pages.

d. 2. Moves text on and off the screen.

b. 3. Eliminates the need to press the enter/return key.

a. 4. Moves, copies, saves, or deletes a paragraph.

h. 5. Permits boldfacing, italicizing, underlining, superscripting, and subscripting.

f. 6. Places text in the middle of the paper and/or screen.

k. 7. Searches for spelling errors.

c. 8. Looks for and locates a particular character string.

j. 9. Causes the cursor to jump several spaces at once.

e. 10. Allows a document to be single-spaced, double-spaced, or triple-spaced.

i. 11. Looks for and writes over a character string with another character string.

l. 12. Determines how long a line will be.

a. Block movement
b. Word wrap
c. Search and find
d. Scroll
e. Line spacing
f. Automatic centering
g. Pagination
h. Character enhancement
i. Search and replace
j. Tab setting
k. Spelling check
l. Margin setting

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Business Software Applications

COMPETENCY

Explain the use of a data base program.

PERFORMANCE OBJECTIVE 13

Following class discussion, the student will be able to explain and identify the main features of a data base program.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Mandell. **Introduction to Computers Using the IBM PC**, pp. 200-225.
3. Sanders. **Computers Today**, p. 271.
4. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Assign the student to read the Information Sheet.
2. Review and discuss the contents of the Information Sheet.
3. Instruct the student to complete the crossword puzzle.
4. Review and discuss answers to the crossword puzzle.
5. Assign the student to work with a data base program.

EVALUATION

The student will match the correct data base terms with appropriate explanations.

COMPETENCY

Explain the use of a data base program.

INFORMATION SHEET 1

The purpose of a data base program is to convert a traditional manual filing system into an electronic filing system. It is used to record and file information, thus helping to reduce the need for paper, file folders, and file cabinets. Data is entered at the keyboard of a computer and stored in a secondary storage device where it can be retrieved. Data can be accessed, updated, sorted, and deleted, and reports can be created from the data in a file.

The terms used to describe the organization of a data base program are as follows:

Field--One data item or a single fact such as a student's name.

Record--Collection of fields related to a single unit such as a student's record.

File--Group of related records such as a class file.

Data base--Group of independent data files.

The main features of most data base software packages are described below:

1. Add enables the computer to add data to an existing record and new records to an existing file.

2. Calculations gives the computer the capability of making mathematical calculations on the data located within a file and to total or count items in a particular field.

3. Create allows the user to define the fields of a file. Fields are defined by their length, type of data, and name.

4. Delete lets the computer remove field names, delete data in a record, or erase a file.

5. Print allows the user to print a report by selecting the fields needed in a report. All the records in a file can be printed records or selected records, based on some specified characteristic.

6. Search allows the computer to look through an existing file and find a particular record(s) based upon the contents of the file.

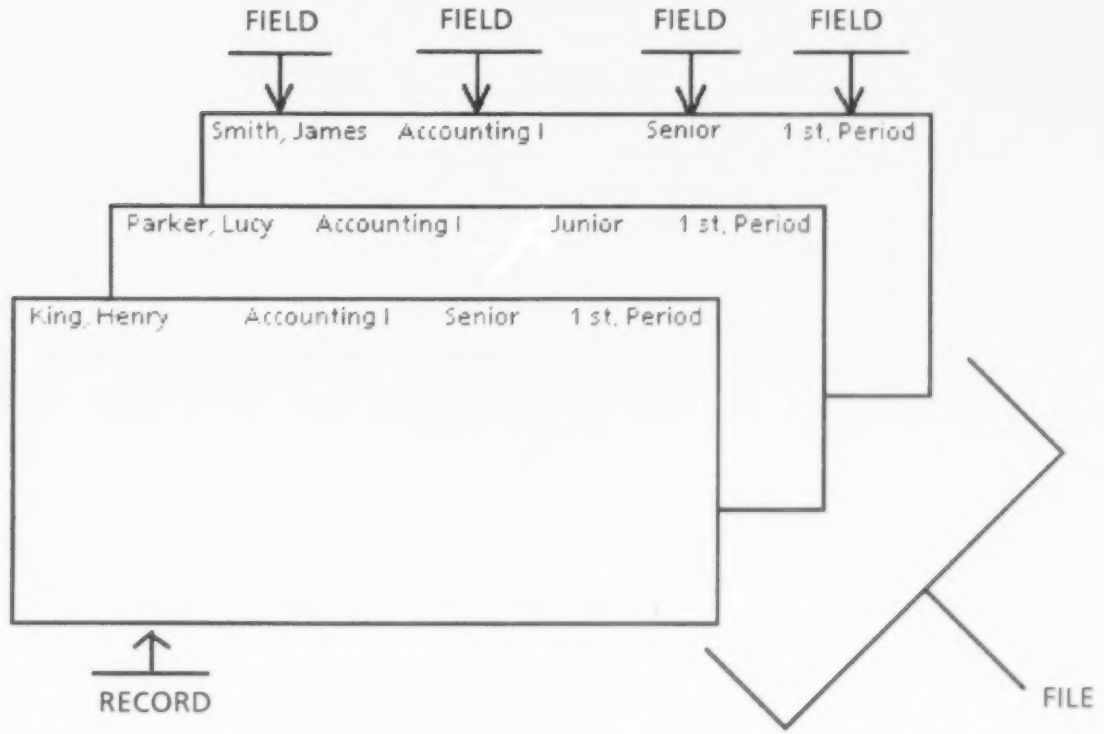
7. Sort causes the computer to arrange the existing file in ascending or descending order based on a particular field.

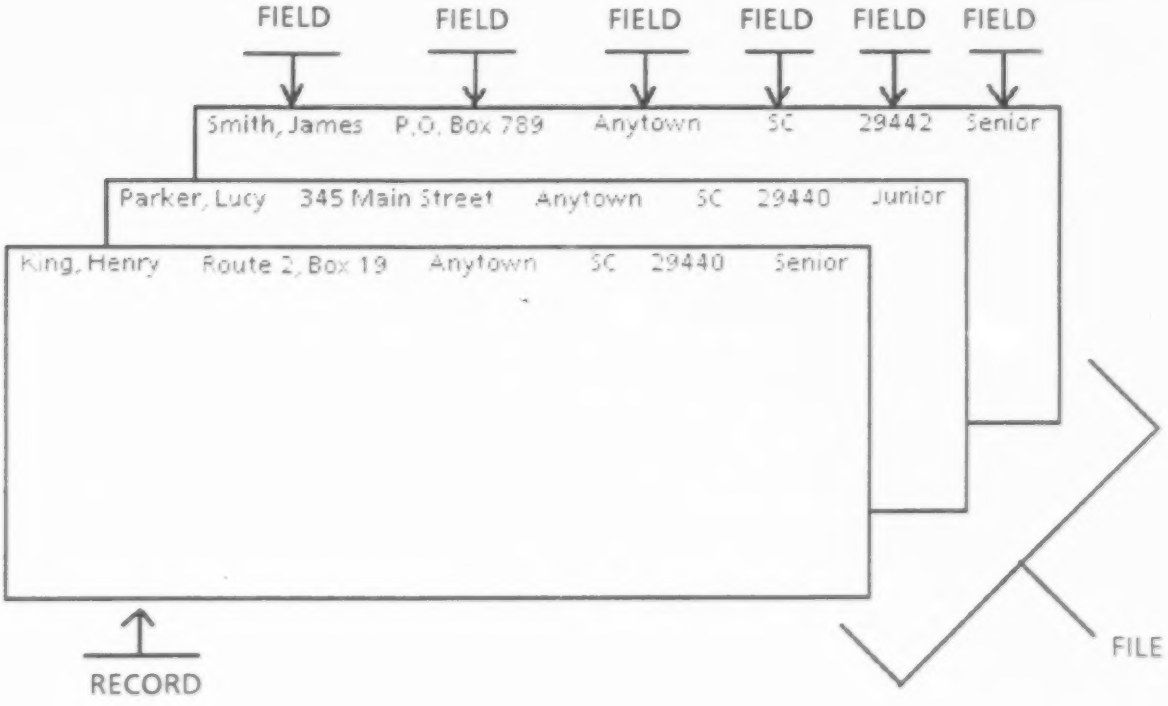
8. Update allows the computer to change data in existing records in a file.

COMPETENCY
Explain the use of a data base program.

INFORMATION SHEET 2

These files make up a data base:



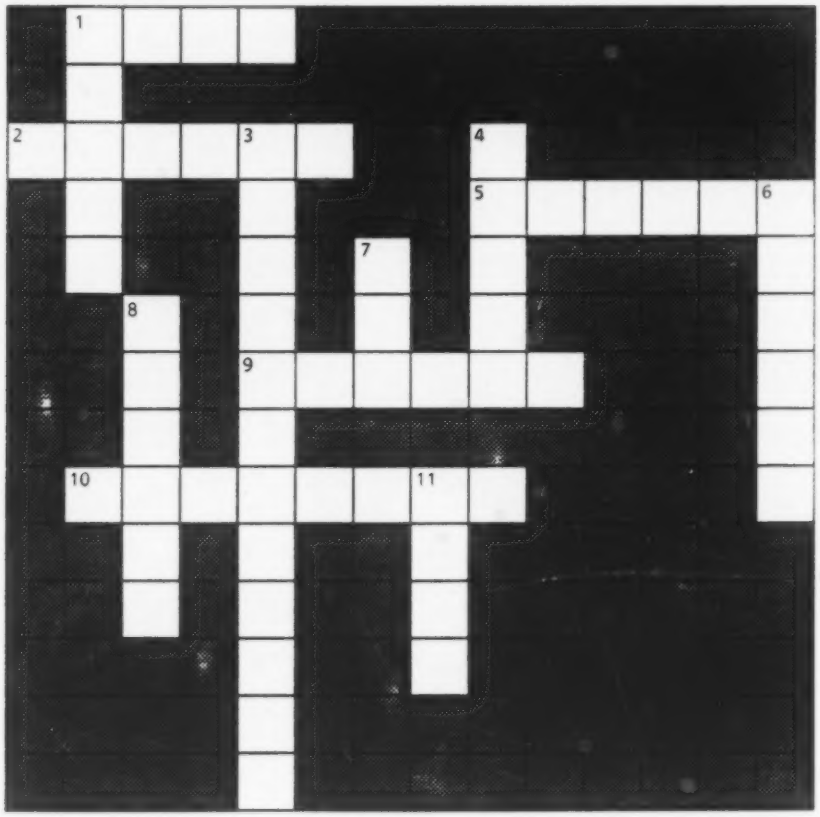


COMPETENCY

Explain the use of a data base program.

ACTIVITY SHEET 1

Insert answers to clues in the appropriately marked spaces.



ACROSS CLUES

1. A group of related records.
2. Finds a particular record.
5. A collection of fields related to a single unit.
9. Change data in an existing record.
10. A group of files.

DOWN CLUES

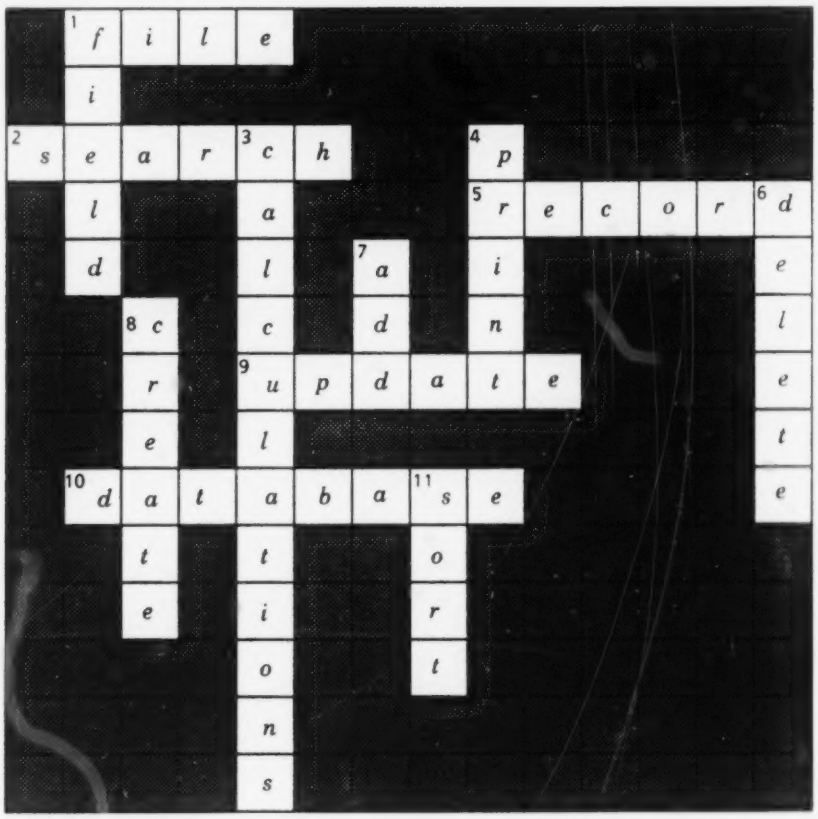
1. One single fact.
3. The ability to make mathematical computations.
4. Allows the computer to print a report.
6. Allows the computer to remove field names and data in a record or erase files.
7. Allows the computer to insert new field names, new data, or new records.
8. Allows the user to define fields.
11. Arranges the files in ascending or descending order.

COMPETENCY

Explain the use of a data base program.

ACTIVITY SHEET 1 Answers

Insert answers to clues in the appropriately marked spaces.



ACROSS CLUES

1. A group of related records.
2. Finds a particular record.
5. A collection of fields related to a single unit.
9. Change data in an existing record.
10. A group of files.

DOWN CLUES

1. One single fact.
3. The ability to make mathematical computations.
4. Allows the computer to print a report.
6. Allows the computer to remove field names and data in a record or erase files.
7. Allows the computer to insert new field names, new data, or new records.
8. Allows the user to define fields.
11. Arranges the files in ascending or descending order.

COMPETENCY

Explain the use of a data base program.

ACTIVITY SHEET 2

Match the terms with correct definitions.

_____ 1. A group of related records.

_____ 2. Arranges a file in ascending or descending order.

_____ 3. Changes data in existing records.

_____ 4. Allows the user to enter the field names of a file.

_____ 5. One data item.

_____ 6. Allows the computer to erase field names and data in a record or file.

_____ 7. Prints a report.

_____ 8. Finds a specified record.

_____ 9. A collection of fields related to a single unit.

_____ 10. Allows the computer to enter new field names or new data to a file.

_____ 11. A group of data files.

_____ 12. Gives the computer the ability to count items in a field.

a. Data base
b. Sort
c. Calculations
d. Print
e. Record
f. Create
g. Add
h. Update
i. File
j. Search
k. Delete
l. Field

COMPETENCY

Explain the use of a data base program.

ACTIVITY SHEET 2 Answers

Match the terms with correct definitions.

i.	1.	A group of related records.
b.	2.	Arranges a file in ascending or descending order.
h.	3.	Changes data in existing records.
f.	4.	Allows the user to enter the field names of a file.
l.	5.	One data item.
k.	6.	Allows the computer to erase field names and data in a record or file.
d.	7.	Prints a report.
j.	8.	Finds a specified record.
e.	9.	A collection of fields related to a single unit.
g.	10.	Allows the computer to enter new field names or new data to a file.
a.	11.	A group of data files.
c.	12.	Gives the computer the ability to count items in a field.

a. Data base
b. Sort
c. Calculations
d. Print
e. Record
f. Create
g. Add
h. Update
i. File
j. Search
k. Delete
l. Field

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Business Software Applications

COMPETENCY

Explain the use of a spreadsheet program.

PERFORMANCE OBJECTIVE 14

Following class discussion, the student will be able to explain and identify the main features of a spreadsheet program.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Brightman and Dimsdale. **Using Computers in an Information Age**, pp. 409-15.
3. Mandell. **Introduction to Computers Using the IBM PC**, pp. 350-59.
4. Shelly and Cashman. **Computer Fundamentals for an Information Age**, p. 12.6.
5. Information Sheets 1 and 2.

INSTRUCTIONAL ACTIVITIES

1. Instruct the student to read Information Sheets 1 and 2.
2. Review and discuss the contents of Information Sheets 1 and 2.
3. Assign the student to complete Activity Sheets 1 and 2.
4. Review and discuss answers to Activity Sheets 1 and 2.
5. Assign the student to work with a spreadsheet program.

EVALUATION

The student will identify terms associated with a spreadsheet program.

COMPETENCY

Explain the use of a spreadsheet program.

INFORMATION SHEET 1

A spreadsheet program is used to do calculations and record transactions electronically. The spreadsheet is divided into rows and columns. The number of rows and columns in a spreadsheet will depend upon the amount of main memory in the computer. Each row is identified by a number, and each column is usually identified by a letter. Since spreadsheet programs have so many rows and columns, only a portion called a window can be displayed at one time. By using the cursor keys, one is able to scroll around the spreadsheet to view other areas.

The intersection of a column and row is called a cell. Information is placed in the cells via the keyboard. The location of a particular piece of information is identified by the location or coordinates of the cell. For example, the intersection of Column G and Row 2 is Cell G2.

There are three types of cells: label, value, and formula. A label cell is used for a title or description and is made up of alphabetical or numerical information. The data in a label cell can be centered, right justified, or left justified. A value cell contains one piece of numeric information. A formula cell contains an equation or formula that will usually calculate the information in numeric cells. An example of a formula would be (A10 - D7). The computer takes the information that is in the cell located in Column D, Row 7, and subtracts it from the information in Column A, Row 10. The data in a value or formula cell can be displayed as dollar values, integers, or percentages.

Most spreadsheet programs provide predefined functions such as SUM, AVERAGE, TOTAL, COUNT, etc. Instead of entering a formula such as C2 + D2 + E2 + F2 + G2 + H2, the user only enters @SUM (C2...H2).

Spreadsheet programs are noted for their "What if?" ability to analyze data. You might ask yourself, "What if I make a larger down payment on the purchase of my car? How would this affect my monthly payments?" Just by changing the variable in one cell, the spreadsheet will automatically recalculate all the cells that are affected.

The main features of most spreadsheet programs are described as follows:

1. Column width gives the computer the ability to change the width of a cell.

2. Copy allows the user to duplicate information or a formula from a cell or group of cells to another area of the spreadsheet.

3. Delete enables the computer to remove cells.

COMPETENCY

Explain the use of a spreadsheet program.

INFORMATION SHEET 1 continued

4. Graphics gives the computer the ability to produce bar graphs, pie charts, and/or line graphs based on the data in a spreadsheet.

5. Hide causes the computer to display some cells and to render those not needed in a calculation invisible. This removes the clutter from the spreadsheet.

6. Insert enables the computer to add cells anywhere in a spreadsheet.

7. Name allows the user to identify a cell and later refer to the cell by name in a formula instead of having to scroll around spreadsheet to find the exact coordinates.

8. Print allows the user to send a signal to the printer that all or any part of a spreadsheet is to be printed.

9. Protect or Lock prevents someone from altering the formula cells without using passwords.

10. Sort arranges data in a spreadsheet data base file.

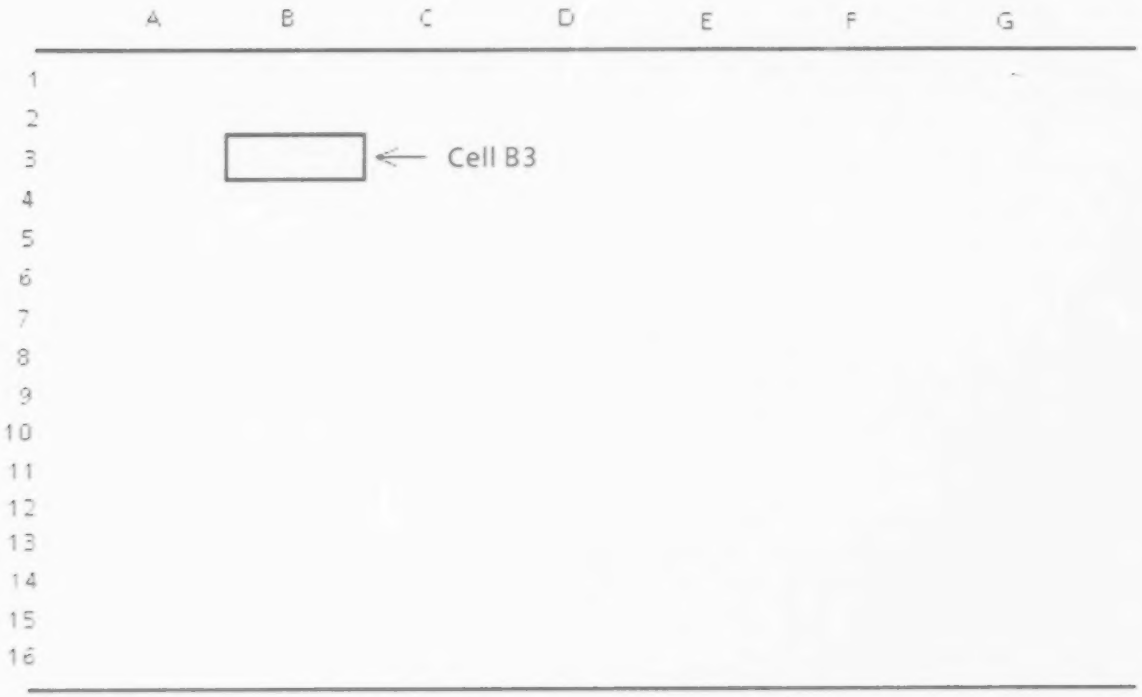
11. Template eliminates the need to set up repetitive spreadsheets by providing an empty spreadsheet consisting of formulas and headings only. The user fills in the appropriate information.

12. Window lets user split the screen into several parts in order to view certain areas of the spreadsheet at one time.

COMPETENCY

Explain the use of a spreadsheet program.

INFORMATION SHEET 2



SCREEN OF A SPREADSHEET PROGRAM

COMPETENCY

Explain the use of a spreadsheet program.

ACTIVITY SHEET 1

Write the feature that best fits the description by using one letter per blank. One character of the feature is already given.

1. S _ _ _
2. _ _ P _
3. _ R _ _ _
4. _ _ _ _ _ _ _ E
5. _ A _ _
6. _ _ _ D _ _
7. _ _ S _ _ _
8. H _ _ _
9. _ _ _ _ E _ _
10. _ E _ _ _ _
11. _ _ _ _ _ _ _ _ _ T _
12. _ _ _ _ _ _ _ S

FEATURES:

1. Arranges data in a spreadsheet data base file.
2. Duplicates information from a cell.
3. Causes the spreadsheet to be printed.
4. Provides an empty spreadsheet.
5. Identifies cells.
6. Causes the screen to split into several parts.
7. Adds cells.
8. Makes cells invisible.
9. Prevents someone from altering a formula.
10. Removes cells.
11. Changes the width of a cell.
12. Produces charts.

COMPETENCY

Explain the use of a spreadsheet program.

ACTIVITY SHEET 1 Answers

Write the feature that best fits the description by using one letter per blank. One character of the feature is already given.

1. S O R T
2. C O P Y
3. P R I N T
4. T E M P L A T E
5. N A M E
6. W I N D O W
7. I N S E R T
8. H I D E
9. P R O T E C T
10. D E L E T E
11. C O L U M N W I D T H
12. G R A P H I C S

FEATURES:

1. Arranges data in a spreadsheet data base file.
2. Duplicates information from a cell.
3. Causes the spreadsheet to be printed.
4. Provides an empty spreadsheet.
5. Identifies cells.
6. Causes the screen to split into several parts.
7. Adds cells.
8. Makes cells invisible.
9. Prevents someone from altering a formula.
10. Removes cells.
11. Changes the width of a cell.
12. Produces charts.

COMPETENCY

Explain the use of a spreadsheet program.

ACTIVITY SHEET 2

Fill in the following blanks with the correct answers.

1. Spreadsheets are divided into _____ and _____.
2. The intersection of where a column and row meet is called a(n) _____.
3. A(n)_____ cell contains an equation.
4. A(n)_____ cell contains a number.
5. A(n)_____ cell contains alphabetical or numerical data.
6. _____, _____, _____, and _____ are a few of the predefined functions of a spreadsheet.
7. G3 means column _____ row _____.
8. _____ eliminates the need to set up repetitive spreadsheets.
9. _____ duplicates a group of cells to another area of the spreadsheet.
10. _____ makes cells invisible.
11. _____ enables the computer to add cells, and _____ enables the computer to remove cells.
12. _____ produces pie charts and line graphs.

COMPETENCY

Explain the use of a spreadsheet program.

ACTIVITY SHEET 2 Answers

Fill in the following blanks with the correct answers.

1. Spreadsheets are divided into *columns* and *rows*.
2. The intersection of where a column and row meet is called a(n) *cell*.
3. A(n) *formula* cell contains an equation.
4. A(n) *value* cell contains a number.
5. A(n) *label* cell contains alphabetical or numerical data.
6. *Sum*, *average*, *total*, and *count* are a few of the predefined functions of a spreadsheet.
7. G3 means column *G* row *3*.
8. *Template* eliminates the need to set up repetitive spreadsheets.
9. *Copy* duplicates a group of cells to another area of the spreadsheet.
10. *Hide* makes cells invisible.
11. *Insert* enables the computer to add cells, and *delete* enables the computer to remove cells.
12. *Graphics* produces pie charts and line graphs.

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Industrial Software Applications

COMPETENCY

List and explain how a computer is used in industry.

PERFORMANCE OBJECTIVE 15

Upon completion of the unit, the student will be able to list and explain how a computer is used in industry.

INSTRUCTIONAL RESOURCES

1. Mandell. **Introduction to Computers Using the IBM PC.**
2. Hacker and Barden. **Technology In Your World.**
3. Fales, Kuetemeyer, and Brusic. **Technology: Today and Tomorrow: Teacher's Annotated Edition.**
4. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Discuss with the student possible uses of a computer in industry.
2. Assign the student to make a list of possible uses of a computer.
3. Instruct the student to ask parents how a computer is used in their work, either directly or indirectly.
4. Assign class to form groups to research and report on how a computer is used to produce a specified product.

EVALUATION

The student will complete the Activity Sheet.

COMPETENCY

List and explain how a computer is used in industry.

INFORMATION SHEET

The computer has practically taken over every aspect of manufacturing in industry today. For example, there is computer-integrated manufacturing that combines the manufacturing, design, and business functions of a company under the control of a computer system. Just-in-time manufacturing is a method that reduces the need for storage space and personnel. Also, a new technique called flexible manufacturing is being used by some companies to produce small batches of custom-tailored products. These are some of the systems that allow manufacturers to produce the best product for the lowest cost.

Computer-integrated manufacturing (CIM) combines the following elements in a computer: design, product analysis and development, inventory control, financial reporting, marketing, invoicing, production scheduling, equipment control, and quality control. Many of these elements are controlled by microcomputers and linked by a network.

Just-in-time (JIT) is a method of making sure that purchased materials and parts arrive at the factory just in time to be used on the production line. When the product is completed, it is immediately shipped to the customer. This allows companies to save on the costs associated with inventory such as rent, heating, lighting, salaries, etc.

Many items today are produced in small batches. Flexible manufacturing makes it possible to produce these small, custom-tailored quantities at a profit. This is accomplished by programming machines on the assembly line to do different operations as the product specifications change.

Some companies have gone to operations that are controlled completely by computers. Of course, they still have people in the plant to operate and maintain the computers.

COMPETENCY

List and explain how a computer is used in industry.

ACTIVITY SHEET

Research the following:

1. Define computer-integrated manufacturing and explain how a computer would have an impact on the system.

2. Define just-in-time manufacturing.

3. How is flexible manufacturing able to compete with manufacturing systems that turn out millions of parts at a lower cost, and what is the function of the computer in this system?

Answers

1. Computer-integrated manufacturing (CIM) combines the following elements in a computer: design, product analysis and development, inventory control, financial reporting, marketing, invoicing, production scheduling, equipment control, and quality control. Many of these elements are controlled by microcomputers and linked by a network.

2. Just-in-time (JIT) is a method of making sure that purchased materials and parts arrive at the factory just in time to be used on the production line. When the product is completed, it is immediately shipped to the customer. This allows companies to save on the costs associated with inventory such as rent, heating, lighting, salaries, etc.

3. Many items today are produced in small batches. Flexible manufacturing makes it possible to produce these small, custom-tailored quantities at a profit. This is accomplished by programming machines on the assembly line to do different operations as the product specifications change.

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Industrial Software Applications

COMPETENCY

Explain computer-aided design and manufacturing.

PERFORMANCE OBJECTIVE 16

Upon completion of the unit, the student will be able to explain computer-aided design and computer-aided manufacturing.

INSTRUCTIONAL RESOURCES

1. Mandell. **Introduction to Computers Using the IBM PC.**
2. French, Svensen, Helsel, and Urbaick. **Mechanical Drawing.**
3. Baril. **Modern Machining Technology.**
4. Fales, Kuetemeyer, and Brusic. **Technology: Today and Tomorrow: Teacher's Annotated Edition.**
5. Information Sheet.

INSTRUCTIONAL ACTIVITIES

1. Discuss with the student the difference between manual drafting and compter-aided drafting.
2. Explain to the student how CAD/CAM systems work together.
3. Assign the student to find and exhibit manually created drawings and computer-assisted drawings.
4. Instruct the student to explain how computer-assisted manufacturing would function in industry.

EVALUATION

The student will complete the Activity Sheet.

COMPETENCY

Explain computer-aided design and manufacturing.

INFORMATION SHEET

Productivity in this country has been increased due to the conversion of most industries to a computer-assisted drafting (CAD)/computer-assisted manufacturing (CAM) system or some variation of this system. In fact, the computer has allowed the United States to compete with other countries in the world market.

Drafters and designers now use CAD systems. These systems are made up of hardware and software configurations. There are mainframe systems with large memories and microcomputer systems with small memories. However, they essentially do the same things. These systems draw faster and more accurately and are more consistent than humans performing the same functions. Now, a computer can generate the drawings for a particular part, be used to design and draw the tools and fixtures to make that part, make up a list of materials needed with the weight of each part, and simulate the finished part, which will enable the designer to determine if the part will function properly. However, this still requires humans to input the data that will give the results needed.

The CAD system may be tied into a CAM system. CAM systems will determine the correct cutting process to do the work; define the cutting conditions during machining; compile the CNC (computerized-numerical control) programs; estimate machining time; and allow for the standardization of cutting tools, jigs, and fixtures needed. CNC is a system that controls various machines such as lathes, milling machines, laser welders, and drills. These machines actually manufacture the parts with a high degree of reliability and accuracy.

CAD/CAM systems are generally part of a flexible manufacturing system. The computer has allowed industry to increase production, reduce quality control problems, and control costs more effectively because there is less human related downtime. However, people are still needed to operate this high technology equipment.

COMPETENCY

Explain computer-aided design and manufacturing.

ACTIVITY SHEET

Complete the following assignment:

Describe in detail how the CAD/CAM system works in a typical industrial application. You may use as many resources as you like.

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Industrial Software Applications

COMPETENCY

Explain the use of industrial robots.

PERFORMANCE OBJECTIVE 17

Upon completion of the unit, the student will be able to explain the use of industrial robots.

INSTRUCTIONAL RESOURCES

1. Mandell. **Introduction to Computers Using the IBM PC.**
2. Fales, Kutemeyer, and Brusic. **Technology: Today and Tomorrow: Teacher's Annotated Edition.**
3. Baril. **Modern Machining Technology.**
4. Information Sheet.
5. Sanders. **Computers Today with Basic.**

INSTRUCTIONAL ACTIVITIES

1. Assign the student to do a library search of the topic "robotics."
2. Discuss with the student the many uses of a robot.
3. Instruct the student to name and discuss at least three industrial applications for robots.
4. Assign the student to define robot.

EVALUATION

The student will complete Activity Sheets 1 and 2.

COMPETENCY

Explain the use of industrial robots.

INFORMATION SHEET

Robots (devices programmed to physically manipulate their surroundings) have become an important part of industry. While they have not quite reached the degree of sophistication you see in the movie **Short Circuit**, they are getting very close. They are ideal for doing repetitive tasks. And they don't get tired!

Robots have been developed to weld, process metals, thermal spray materials that may be hazardous to humans, assemble and inspect products, dispose of hazardous wastes, load/unload material from trucks and ships, etc. One of the more common methods of employing a robot is in the machining operations. It works very nicely to set a robot in the center of a group of machine tools and let it change tools, move parts, etc.

It is not always economical to use a computer. Many companies are very careful to have the right balance between robots and humans, although the tendency is to have fewer humans because of cost factors and consistency. We humans just cannot be as consistent as machines! Though robots may displace workers in doing repetitive or dangerous tasks, they allow humans to concentrate on higher order tasks, e.g., programming the computer.

The robots of the future will certainly be more sophisticated than the ones we use today. In fact, the sophisticated robot has vision and can "feel." Robots that use cameras for eyes are being used in some industries to inspect parts by comparing the actual part to one that is in the robot's memory. Some robots "feel" with lasers to get into the correct position. Production robots have a built-in program called Feedback (typically done with sensors) that allows the unit to make corrections, e.g., a VCR stops when it gets to the end of the tape because a sensor tells it. Two things must be kept in mind about robots: they must be programmed, and someone has to know when to push the button to get them to start or stop.

COMPETENCY

Explain the use of industrial robots.

ACTIVITY SHEET 1

1. Identify eight systems in your home and tell why they are robots.

2. Describe how two of the systems you mentioned might be linked to a central control system.

COMPETENCY

Explain the use of industrial robots.

ACTIVITY SHEET 1 Answers

1. Possible answers:

   Furnace/air conditioner
   VCR
   Washing machine
   Dryer
   Refrigerator
   Range (stove)
   Microwave
   Dishwasher
   Water heater
   Vacuum cleaner
   Security system
   Lawn sprinklers
   Answering machine

   NOTE: Anything controlled by a sensor will qualify as a robot.

2. Possible answers:

   A. Furnace/air conditioner is controlled by computer to set thermostat back during sleep hours and turn it up during waking hours.
   B. Security system is tied to computer to control inside/outside lighting and alarm system.

COMPETENCY

Explain the use of industrial robots.

ACTIVITY SHEET 2

Write a 200 word essay on robots and prepare to present the essay to class using at least three visuals. The visuals may be photos, drawings, sketches, video, or mock-up.

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Miscellaneous Software Applications

COMPETENCY

Operate a computer using math functions.

PERFORMANCE OBJECTIVE 18

Upon completion of the unit, the student will use a computer to perform special math functions.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Information Sheet.
3. **Beginning Applesoft Basic: Training Guide,** p. 11-14.

INSTRUCTIONAL ACTIVITIES

1. Assign the student to review the Information Sheet on mathematical symbols.
2. Instruct the student to participate in a demonstration of the symbols used to perform math functions on a computer.
3. Assign the student to demonstrate proficiency in performing math functions on a computer by completing the Activity Sheet.

EVALUATION

The student will use the correct symbols to perform math functions as illustrated on the Information Sheet.

COMPETENCY

Operate a computer using math functions.

INFORMATION SHEET

Mathematical Symbols:

Computer work and programming languages require the use of some special mathematical symbols. Since a computer's keyboard is much like a typewriter and does not have a key to indicate division, multiplication, or exponentiation, other symbols must be used to indicate these operations.

Operation	Symbol	Example
addition	+	8 + 2
subtraction	–	8 – 2
multiplication	*	8 * 2
division	/	8 / 2
exponent	^ or **	8 ^ 2

The symbol for exponent often appears as an upward arrow ^; however, the APPLE computer does not have a key for this symbol. To indicate an exponent on the APPLE, use

(graphic SHIFT N)

The proper method for entering the information on the APPLE (or IBM compatible) is to key **PRINT** or **?** to get the computer to operate as a calculator.

For example:

print 8*2
or
? 8*2

The answer should appear on the next line.

COMPETENCY

Operate a computer using math functions.

ACTIVITY SHEET

Complete each of the following math operations on a computer. Do not clear your screen until it has been checked by the teacher.

Add 2 and 4.

Subtract 2 from 4.

Multiply 2 by 4.

Divide 4 by 2.

Raise 4 to the 2nd power.

Answers

1. 6
2. 2
3. 8
4. 2
5. 16

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Miscellaneous Software Applications

COMPETENCY

Identify job openings with a computer.

PERFORMANCE OBJECTIVE 19

Upon completion of the unit, the student will use a computer to select a job opening.

INSTRUCTIONAL RESOURCE

1. Computers for student use.
2. Information Sheets 1, 2, 3, 4, and 5.
3. SCOIS manual.

INSTRUCTIONAL ACTIVITIES

1. Instruct the student to use SCOIS or a comparable program to determine job openings.
2. Load sample job requirements in a file and instruct the student to search the file.
3. Invite the guidance counselor or person in charge of SCOIS to speak to class (if SCOIS is offered at school).
4. Invite the guidance counselor to speak on other job search programs if SCOIS is not available.

EVALUATION

The student will retrieve data in a particular job area.

COMPETENCY

Identify job openings with a computer.

INFORMATION SHEET 1

THIS IS SCOIS

The South Carolina Occupational Information System (SCOIS) is a computerized method of delivering up-to-date educational and occupational information quickly and efficiently to the people who need it most.

SCOIS is dedicated to providing students, adults, teachers, and counselors with the information quickly and efficiently.

SCOIS has computer terminals at various sites throughout the state. These facilities provide access to vast quantities of occupational and educational information.

SCOIS was set up by the South Carolina Occupational Information Coordinating Committee (SCOICC). SCOICC is a consortium of state agencies including the Employment Security Commission, the Office of the Governor, the Department of Education, the Department of Vocational Rehabilitation, the State Board for Technical and Comprehensive Education, the Commission on Higher Education, the State Development Board, the Department of Social Services, and the Budget and Control Board, Research and Statistical Services Division.

The agencies involved all have a tremendous interest in seeing that the transition from school to work is made successfully by South Carolinians. They are also particularly cognizant of our growing state's need for a well prepared work force to meet the demands of our economy in the future.

COMPETENCY

Identify job openings with a computer.

INFORMATION SHEET 2

LOG-IN INSTRUCTIONS

To access SCOIS through CUFAN telephone lines do the following:

1. Turn on terminal.
2. Ask your teacher for proper setup of keys.
3. Call CUFAN telephone number for your area. (Refer to Information Sheet 4 for list of CUFAN telephone numbers.)
4. Turn the modem on. When a connection is made, a red light on the modem will come on if the computer terminal has one. Microcomputer will show CONNECT. Proceed to Step 5.
5. Press RETURN key twice.

   The following message will appear:

   WELCOME TO THE CLEMSON UNIVERSITY COLLEGE OF AGRICULTURAL SCIENCES NETWORK. PLEASE ENTER **CUFAN** OR **SCOIS** IN CAPITAL LETTERS FOLLOWED BY THE RETURN KEY.
6. Key **SCOIS.** Press RETURN key. This step must be completed quickly to avoid automatic log out.

   The following message will appear.

   COM (IF YOU DON'T GET A COM MESSAGE, SEE LIST OF MESSAGES BELOW.)
7. Press RETURN key several times until this message appears: LOGIN PLEASE.
8. Key **LOGIN** (space bar) **SCOIS** (RETURN).
9. Enter four-digit account number when requested. (Your teacher will give you this.)
10. Key appropriate responses to questions.

CUFAN MESSAGES:

COM = You are connected. Key **LOGIN SCOIS.**

DER = The SCOIS computer is out of service.

COMPETENCY

Identify job openings with a computer.

INFORMATION SHEET 2 continued

ERR = CUFAN or SCOIS was not entered correctly.

MOM = Your request is being processed.

OCC = All SCOIS lines are in use.

To Access SCOIS through WATS or Columbia telephone lines do the following:

1. Turn on terminal.
2. Ask your teacher for proper setup of keys.
3. Call computer telephone number: 1-800-922-6673 (WATS) OR 737-2807 (Columbia).
4. After receiving data tone, place telephone receiver into coupler.
5. Press RETURN key.
6. Key **LOGIN** (space bar) **SCOIS** (RETURN).
7. Enter four-digit account number as given by teacher.
8. Key appropriate responses to questions.

LOG-OUT INSTRUCTIONS

1. Key /L to bring up SCOIS menu.
2. Key the NUMBER designated LOG OUT in the SCOIS menu.
3. Press RETURN.

REMEMBER! ALWAYS log out from the computer after you have received the necessary information. Failure to log out ties up a line and may prevent someone else from gaining access to the computer.

COMPETENCY

Identify job openings with a computer.

INFORMATION SHEET 3

SCOIS FILES

Key **LOGIN SCOIS** to access the following files:

COIN FILES

Occupations File	Information on major occupations and their specialties.
College Major File	Descriptions of related postsecondary education and training programs.
College File	Descriptions of two-year and four-year colleges and universities.
Apprenticeship Files	Descriptions of national apprenticeship training programs related to COIN occupations.
Military File	Descriptions of military occupations and training opportunities which relate to COIN occupations.
School Subjects File	Information on high school subjects related to COIN occupations.

OTHER SCOIS FILES

Job Bank File	Information on current job openings available through the S.C. Employment Security Commission.
Private Vocational Schools File	Information on proprietary schools which offer vocational training in South Carolina.
Graduate School File	A directory of graduate degree programs and schools offering graduate degrees in South Carolina.
Economic News File	Economic and employment news for South Carolina and its counties, as well as for the nation.
Educational Applicant File	Mini-resumes of teacher applicants and educational administrators available for the nation.

COMPETENCY

Identify job openings with a computer.

INFORMATION SHEET 3 continued

Financial Aid File	Information about major sources of financial aid for educational expenses.
Educational Newsline	News and information related to education. This file is updated weekly by the Department of Education.
Legislative Bulletin	Legislative news and other information of interest to school administrators. This file is updated by the South Carolina School Boards Association.

SCOIS CALENDAR

Key **LOGIN CALENDAR** to print the following:

SCOIS Calendar	Computer generated copy of SCOIS calendar for the school year.

COMPENTENCY

Identify job openings with a computer.

INFORMATION SHEET 4

SCOIS COMPUTER TELEPHONE NUMBERS

WATS Telephone Number: 1-800-922-6673
If you are unable to make a local call to your county seat, you may access SCOIS through our WATS telephone line.

COLUMBIA Telephone Number: 737-2807
All SCOIS users who can make a local call to Columbia should access SCOIS through the Columbia telephone line.

GREENVILLE Telephone Number: 271-6880
All SCOIS users who can make a local call to Greenville should access SCOIS through the Greenville telephone line.

SPARTANBURG Telephone Number: 585-9920
All SCOIS users who can make a local call to Spartanburg should access SCOIS through the Spartanburg telephone line.

CHARLESTON Telephone Number: 727-2038
All SCOIS users who can make a local call to Charleston should access SCOIS through the Charleston telephone line.

TROUBLE Telephone Number: 737-2733
If you have problems accessing SCOIS, please call the SCOIS office for assistance.

*Use CUFAN telephone number only if you are unable to make a local call through SCOIS computer telephone number.

**Richland County users should use the Columbia computer telephone number: 737-2807.

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COMPETENCY

Identify job openings with a computer.

INFORMATION SHEET 5

COMPUTER TERMINAL OPERATING HINTS

COMPUTER COMMANDS

RETURN This orders the computer to CONTINUE.

Press RETURN key:

1. After answering a question.
2. If the terminal pauses after typing a section of text.

/S This orders the computer to STOP and return to beginning of COIN.

Wait for the terminal to pause, then key /**S** and press RETURN. The computer will return to the beginning of COIN ("Welcome to the COIN..."). This applies only in COIN.

/L This orders the computer to return to the MAIN MENU.

Wait for the computer to pause, or after the next question, key /**L** and press the return key.

1. To log out, key the NUMBER for LOGOUT in the SCOIS Menu.

2. To go from ONE FILE TO ANOTHER (e.g., from COIN to JOBANK), enter /**L** and press the return key. When the main menu appears, select the appropriate option.

Y This signals YES to the computer.

N This signals NO to the computer.

MORE HELPFUL HINTS

Data entry errors made prior to pressing the return key can be corrected.

To CORRECT a key-entry ERROR do the following:

1. To erase one character press SHIFT button and at the same time press the QUOTE mark.

2. To erase more than one character or a complete line, press SHIFT button and at the same time press the QUESTION MARK located on the lower right side of the keyboard.

COMPETENCY

Identify job openings with a computer.

INFORMATION SHEET 5 continued

After erasing a character or a line, simply continue on the same line with the correct response, as if an error has not been made.

To see a list of occupations or schools after completing your search, answer N to the question: "Do you wish to search further?"

A light on the modem is the key. As long as the light remains on, you may log in and log out as many times as you wish. When the light goes out, it means you have lost contact with the computer and must re-dial the telephone number and log in again.

COMPETENCY

Identify job openings with a computer.

ACTIVITY SHEET

Use the school SCOIS or another file to look up job openings. Write the requirements you want in a job before you search the files--to prevent spending too much time at the computer. Consider the following areas in your written requirements, but do not limit requirements to these areas only:

1. Type of work to be done (manual, light lifting, strenuous exercise necessary, etc.).
2. Travel requirements.
3. Salary.
4. Benefits.

Answers

The student should use SCOIS or a comparable file to search job requirements for credit in this area.

COURSE BASIC COMPUTER LITERACY

UNIT C

Understanding Miscellaneous Software Applications

COMPETENCY

Use a computer for personal management.

PERFORMANCE OBJECTIVE 20

Upon completion of the unit, the student will be able to use a computer for personal management to help organize materials and save time.

INSTRUCTIONAL RESOURCES

1. Computers for student use.
2. Copies of a spreadsheet, word processor, and data base. (One inexpensive but easy to use program can be purchased at many local bookstores. Spinnaker is the name of a company that makes programs in all three areas for less than $10.00 a disk. The word processor is called Easy Working: The Writer, the spreadsheet is called Easy Working: The Planner, and the data base is called Easy Working: The Filer. Another program that may be available to schools is PFS: First Choice. It is a full-scale, pull down menu program that includes word processing, spreadsheet, data base, and telecommunications.

INSTRUCTIONAL ACTIVITIES

1. Assign the student to use a computer as a spreadsheet.
2. Assign the student to use a computer as a word processor.
3. Assign the student to use a computer as a data base.

EVALUATION

The student will demonstrate use of a computer to perform tasks for personal management.

COMPETENCY

Use a computer for personal management.

INFORMATION SHEET

Review the Information Sheets in the following Performance Objectives:

Performance Objective 12	Word Processing
Performance Objective 13	Data Processing
Performance Objective 14	Spreadsheets

The above programs have personal management applications as well as business applications.

COMPETENCY

Use a computer for personal management.

ACTIVITY SHEET 1

Use a word processor to write a short letter to your favorite teacher telling the thing(s) you like most about his/her class. Be sure to use the spell checker to check your spelling.

Answer

The student must be able to write a letter on the computer.

COMPETENCY

Use a computer for personal management.

ACTIVITY SHEET 2

Use a computer to operate a spreadsheet. You will be asked to go into a file, change data, and exit a file.

NAME OF FILE TO ENTER:

DATA TO CHANGE:

HOW TO EXIT THE FILE:

Answer

The student must enter a file, change the specified data, and exit the program as instructed.

COMPETENCY

Use a computer for personal management.

ACTIVITY SHEET 3

Use a computer as a data base to enter the following for each member of the class.

NAME:

ADDRESS:

HOME PHONE NUMBER:

Answers

The student must enter information correctly.

APPENDICES

APPENDIX A

CHOOSING A COMPUTER SYSTEM

APPENDIX A

CHOOSING A COMPUTER SYSTEM

The computer revolution is here. Computers are revolutionizing every aspect of our daily lives: the stores in which we shop, the banks that handle our money, the games we play, and the offices where we work. Computers have changed the way many people, including children, spend their leisure time. Computers are also playing an increasingly important role in our schools today.

Many people may ask what is a computer? A computer is a device which can perform computations, including arithmetic and logic operations, without intervention by a human being.

The computer system, or hardware, consists of four devices to handle data. These devices include the input units, the central processing unit, the output unit, and secondary storage unit. The input unit brings data and instructions from the outside world to the computer's memory. A common input unit has a typewriter-like keyboard which is used to input data and instructions. Some other ways to input data include the punched card which is read through a card reader, floppy disks read through a floppy disk reader, and magnetic tape read through a magnetic tape drive.

Data that is read into the computer can be defined as facts or raw material which is to be processed by the computer. Data might include letters, numbers, observations such as grades in a class, or students' names. This data becomes information which is organized and may be useful after it is processed.

Another device of the computer is the central processing unit, or CPU, which consists of a primary memory, control unit, and arithmetic-logic unit. The primary memory stores the instructions and data which were input into the computer. The control unit directs the operation of other computer components by interpreting the instructions which are stored in the primary memory. The arithmetic-logic unit performs arithmetic operations and logical operations.

The output unit sends the computer's answers from the computer to the outside world. Some common output units include terminals and printers.

A secondary storage unit is a device which stores our data and instructions until we may need the information. Data may be stored on magnetic disks which are read by disk drives or on magnetic tape reels which are read by tape drives.

Software, or a program, is a complete set of instructions written in a computer language to solve a certain problem. Programs must be written in a computer language so that the computer will understand. Some common languages computers understand are BASIC, FORTRAN, and COBOL.

Computers are becoming useful tools in all career occupations, in addition to finding their way into our homes for entertainment and personal use. Business educators should find a way to introduce their students to computers, whether it is a course on computer literacy or a hands-on course using the computer and writing programs, if a computer is available

Through education in high school, students may be made aware of the different careers available using computers. Careers in data processing involve using a computer in an effort to convert data into useful information. A student who has had data processing in high school may be employed by a company as a data entry operator or a computer librarian. Data entry operators use machines to prepare data on cards, disks, or tape which will be processed by the computer. A computer librarian guards data and programs which are stored. The librarian controls files of data stored on tapes, disks, or cards; keeps records; updates the files; and prevents anyone who is unauthorized from gaining access to the data and programs. Other computer positions which require further education include computer operators, programmers, and systems analysts. Computer operators work with the computer and keep the computer system running properly. A computer programmer writes, designs, and implements the program. A systems analyst plans, organizes, and designs a computer system for an organization. An analyst may also study the existing system for any needed improvements.

Purchasing the right computer for use in education may require some research. Different kinds of equipment and systems are on the market to meet the needs of the classroom. Select a computer system that will perform one or more specific functions for a price that seems worth it.

It is best to gain knowledge on what a computer can and cannot do. Read literature and talk to those who have already acquired knowledge and experience. Computer store employees and dealers of different computer systems can be helpful. It may be a good idea to deal locally.

In the computer revolution we have mainframe computers and microcomputers. Mainframes are large computers which are capable of processing large amounts of data at fast speeds. These computers are usually used by large companies to provide comprehensive computer services.

The microcomputer has changed many people's views concerning computers. Microcomputers today are found in businesses, homes, and classrooms. Most microcomputers use a cathrode ray tube (a television-like screen) as an output device and a typewriter-like keyboard as an input device. Microcomputers can use secondary storage devices such as cassette tapes and floppy disks.

Business educators must be up-to-date on the microcomputer systems now available. Equipment should be selected which would allow the student to learn basic concepts in the operation of hardware, data entry, and programming. A microcomputer system should not be purchased without considering all possible alternatives. There are several questions one should ask when purchasing a microcomputer: questions about expansion, increasing capacity, adding input or output units, maintenance contracts, and repair services.

The microcomputer system you purchase will probably depend upon the amount of funds available. Advice concerning the purchase of a microcomputer may be gained by visiting other school systems and observing their programs.

Before purchasing a computer system you should decide what tasks you would like it to perform. A computer system should be bought based upon your evaluation of software. Depending upon your needs, a software package may determine your choice of a computer. You may never find a piece of software that meets all the requirements.

Several rules may be helpful in evaluating software. These rules include the following:

1. Look for local sales and services. No piece of software runs perfectly. In order to have your questions answered promptly, it is a good idea to purchase your computer system and software from a local computer store. The store will be familiar with your system, your needs, and software. Your local dealer will also be able to help you in training with the software purchased.

2. Buy software that does what you need it to do. Don't be misled by packaging of software. Make sure how a particular software package operates. Some dealers will try to reshape your needs to fit their package.

3. Obtain and read the documentation for the software. A documentation for a software package should contain easy-to-understand operator manuals. Read the documentation before the demonstration in order to be well informed of the particular software package.

4. Thoroughly test the software. A test should be done with "hands-on" use of the computer. Review the software at an installation, using data to make sure all questions about the software package are answered.

5. Look for good error checking. A well designed program will inform you of problems and send you back to correctly enter the response that caused the problem.

6. Demand fast and flexible data retrieved. Retrieving data which is stored on a computer system should be easily retrieved by the computer in a matter of seconds.

7. Buy software that makes the computer do the work. A continuous process where you are changing disks or entering the same information is a sign of poor software. Software should not cause you any trouble.

8. Look for software that runs on different hardware. If someday you purchased a new computer system, it would be advantageous to be able to use your software packages on the new computer without causing a big expense.

Software can be purchased in many languages and can accomplish many tasks in the classroom, at home, or in an office. It is important to remember that all software cannot be interchangeable among computers. Buying the software for your microcomputer should be the most important task. A dealership which sells both the software and hardware would be most beneficial. The more programs that are available for a microcomputer, the greater will be your success in using the microcomputer in your classroom.

As discussed earlier, it is important to understand how a computer system works and what equipment will be needed for a microcomputer to work properly.

When purchasing a computer, as in purchasing software, it may be important to follow the guidelines listed below:

1. Look for local sales and service. Buying a computer system locally may provide you with local support. A maintenance contract with a local dealership may eliminate a big expense and allow time which could be used working with the computer.

2. Beware of new products. Before purchasing a new product, it is advisable to wait until the company has learned its functions and lessons and has used these to produce a better and improved model.

3. Look for durable construction and engineering. Since students will be using the computer system, the system should be rugged. A school cannot afford to purchase a cheap computer which would constantly continue to break down.

4. Allow for expansion. Most computers can be expandable. Purchase a computer that is expandable or that is powerful enough to meet your future demands.

5. Look for good and well-documented systems software. Research through magazines for a computer system which uses disks effectively. Know the BASIC interpreter (a language translator which is supplied with a system) before purchasing. If you plan to teach programming, a good, effective interpreter is important. Some computers may have poor interpreters, which would cost you in having to purchase another interpreter for the system.

6. Choose a system with more than one language available. BASIC may be more familiar and is a good language, but you may later want to expand your needs to other languages. COBOL, FORTRAN, Pascal, or Logo may meet your needs better. Purchasing a computer with a variety of systems software support can help you meet your different language needs.

7. Look for systems with a lot of available applications software. A system which has many programs provides you with a quality in running the system, keyboard, screen editing, and other components. Teachers do not have time to write all programs needed, and programs which have already been written may be a valuable asset.

8. Talk to owners and users of the systems you are considering. Reports of experience with their computers may be very useful.

9. Don't rush anything. Don't make a hasty decision which you might later regret.

10. Remember that all rules have exceptions. These ten rules have exceptions. You are not bound to these rules, but purchasing a computer should be done intelligently.

Purchasing a microcomputer requires some research on just the right computer that will work properly for you. A keyboard is essential to the purchase of a microcomputer in that it enables you to type the programs into the computer. A cathrode ray tube, or a video screen, is also needed to show the output. Some microcomputers can be purchased with a screen and keyboard combined; but to keep the costs at a minimum, a television set may be used for the screen.

Another device needed with the microcomputer is a disk drive which is used to read floppy disks. Some computer systems may use a cassette recorder which plays a cassette tape. There are advantages and disadvantages to using either computer system.

Cassette based microcomputers are inexpensive. Cassette recorders are extra as are the monitors. The use of cassette may cut down on the cost of a microcomputer since most schools already own a cassette recorder. Cassette based microcomputers can be purchased ranging in costs from $100 to $1,250, depending upon the quality of the computer. Cassette based computers have several disadvantages. It takes a long time to load a program from the cassette into the computer. Some cassette systems are unreliable in that the computer may not accept the cassette. Cassette tapes also cannot store large amounts of data. Cassette based computers also have advantages in that they are cheap, and a school could afford to provide sufficient units to work with a whole class.

Some microcomputers which use the cassette can be upgraded to floppy disk systems. Purchasing floppy disk computers ranges in price from $1,000 to as high as $5,000, which is the cost of some of the more sophisticated systems. The price rises with the increasing density of storage, reliability, speed of access, the operating system, and quality of the overall components.

The advantage of the floppy disk computer is that it overcomes all the disadvantages of the cassette based computer. Loading and saving programs is quicker and more reliable, and floppy disks allow you to make effective use of the computer for applications requiring storage and retrieval of data.

Floppy disk based systems also have disadvantages. Since they are more complex than the cassette based computer, the control of the floppy disk requires a more sophisticated operating system. Since floppy disks are easier to load and save, they will become larger and more complex; therefore, a computer that has more memory should be purchased. The choices of languages which are available on floppy disk are greater also.

The microcomputer's basic hardware consists of the memory, a terminal or screen, and a storage device. A printer can be added in which paper is used to communicate.

> "There are many printers to choose from. On the low end, Apple offers a very small printer (8-inch carriage), which prints on heat-sensitive paper, for under $400; one of its primary assets is that it is nonimpact, and therefore silent. In the middle range, there are versatile dot-matrix printers from under $1,000 to $2,000. The top of the line is a heavy-duty letter-quality printer used for word processing; Diablo and NEC offer this type of printer for about $3,000."

The top manufacturers from which to select a microcomputer include Tandy Corporation, Apple Computer, and IBM. Other computer manufacturers include the Atari, Hewlett-Packard, MicroStar, Ohio Scientific Challenger, Texas Instruments, and Zenith-Heath.

Tandy Corporation is better known to us as Radio Shack. The Tandy Corporation first introduced the TRS-80, later the TRS-80 Model II, TRS-80 Model III, and the latest TRS-80 Model 12. The TRS-80 Model 12 features the ability to handle accounting and word processing, meet program development requirements, and can be connected to mainframes. It also is able to use all software which is available for the TRS-80 Model II. The TRS-80 Model 12 has an 80K memory and a built-in floppy disk drive, a screen, and a keyboard. This system sells for about $3,199.

The Apple Computer has introduced the Apple II, Apple IIe, and now the Apple III. The Apple IIe is built for educational uses. It uses all the equipment of the Apple II, but the "e" means more memory base has been added. The Apple IIe has a standard memory of 64K, but is expandable to 128K. The Apple IIe has standard devices which include a stand, a redesigned keyboard, larger screen, and disk drive. The Apple IIe is advertised to have access to more accessories and educational software. The system sells for about $2,000.

Several alternatives besides purchasing a complete computer system are available. It may be possible for a school to time share with larger institutions which may include banks, colleges, or local companies. In using the time-sharing process, a school may purchase the terminals which are connected to a central computer or mainframe by telephone wires or cable wires. A response can be received in seconds because of the computer's speed. Time-sharing may eliminate the need for a school buying a larger computer system.

Another alternative to buying a complete system would be for the school to lease equipment from the manufacturer. Leasing equipment would allow the system to be kept up-to-date.

Microcomputers in the classroom can be a valuable part in the curriculum. Students can gain hands-on experience and can learn more information in directly working at the terminal. Microcomputers should be designed to introduce the student to an understanding of computer literacy, the hardware system available, word processing applications, and programming skills in BASIC and other computer languages.

In the computer revolution age, we as educators must be up-to-date on all new equipment. Computers purchased should prepare students for positions available now and in the future. Students can also benefit from the computer in knowing that a computer is a tool which can be used to solve problems to help them be more productive in the world of work. Microcomputers are inexpensive and can provide many rewards for both the student and school.

APPENDIX B

DISK OPERATING SYSTEM

APPENDIX B

DISK OPERATING SYSTEM

Learning Basic DOS

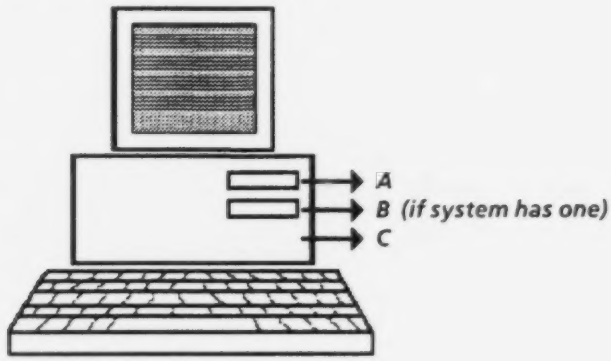
WHAT IS HARDWARE?

A computer is made up of distinct components, normally consisting of a monitor, a processor unit which includes the disk drives, a keyboard, and perhaps a printer. This is what is known as hardware.

Your monitor and keyboard will vary slightly depending on the type of system you will be using in your office. It will be simply a matter of adjusting to the placement of the keys.

The processor unit is the base portion of the computer and houses the internal workings of the PC such as circuit boards and memory chips. It also houses the disk drives.

A disk drive can be either a floppy disk drive or a hard disk drive. A computer can have different combinations of these disk drives. Whatever the combination, each drive has a unique name designated by a letter. Your floppy disk drives will be A or B, while your hard drive is always the C drive. Therefore, if your computer has two floppy drives and a hard drive, your top (or left) floppy drive will be drive A and your bottom (or right) floppy drive will be B and your hard disk drive will be C. (This is the norm; some PC's may be different.) If you only have one floppy drive and one hard drive, you will have Drives A and C.



You can have many different kinds of printers attached to your computer. In your office you may have a dot matrix, a character printer, or a laser printer. A little practice will soon make you proficient on your printer.

B drive = low-capacity drive
A drive = high-capacity drive

WHAT IS DOS?

DOS stands for Disk Operating System. But what does this really mean? It means that without DOS your computer will not work! DOS controls all parts of your computer system and makes it possible for other programs, such as Word and Lotus, to run on your PC. It gives you complete control over what your computer does and how it does it.

DOS is made up of commands--many of which we will be covering in our course. These commands can be external or internal commands. An **internal command** stays resident or is always available to DOS to be used. It is loaded into the computer's memory every time you turn the computer on. An **external command** is not loaded until you request it. DOS must look somewhere to find this command, whether it be on a floppy disk or in a directory on your hard disk. Don't be too concerned if you don't understand all of these terms right now; we will be learning more about them in the following lessons.

Why must we have an operating system? Let's imagine for a moment that we don't. In your office, you might have a word processing program, a spreadsheet program, and a database program. Each of these is called an **application program** because each performs a unique function and is good at performing just that application. But what if each of these application programs had to tell the computer how to receive instructions from the keyboard and how to display and print results, and how to read and write files to and from a disk, and how to change colors on your monitor, and how to . . . Suddenly your application program is not as efficient nor is there any consistency in these functions. That's where DOS comes into place. It does these jobs and does them well!

TURNING YOUR SYSTEM ON

Powering your machine up by using the on/off switch is referred to as a **cold boot**. There may be times when you will need to reset your machine due to a lockup. The quickest way to do this is by using the **CTRL/ALT/DEL** keys. You will hear this referred to as a **warm boot**. A warm boot is easier on a PC than a cold boot.

Date and Time Prompt

When you first turn the system on, you will be prompted to enter first the date and then the time. If your computer is equipped with an internal clock, you will simply touch the enter key twice to confirm the current date and time. If it is not, you will want to enter the date and the time in the following way:

DATE is entered as mm-dd-yy.
December 15, 1987 is entered 12-15-87.

TIME is entered as hh:mm.
10:15 a.m. is entered 10:15.
2:30 p.m. is entered 14:30.

NOTE: You may change the date or time by typing DATE or TIME at your system prompt (after already at the C prompt).

System Prompts

Whenever you see either A> or C>, you are at your system prompt. This is where you enter commands to have DOS do something for you.

It is very easy to change from one drive to another simply by typing the drive identifier followed by a colon.

EXAMPLE:

Command	**Result**
C> a:	Switches to drive A (floppy drive)
A> c:	Switches to drive C (hard drive)

Try switching to your floppy disk drive now. Note that DOS responds to your command by showing you the A prompt. Now switch back the the C prompt.

It is possible to change your prompt to give you more information than just the drive designation. Let's do that now.

Abort --forget it.
Retry --try again.
Ignore --ignore that you had a problem and try it again. (Seldom used.)

EXERCISE - CHANGING THE PROMPT

1. At the prompt, type in:

   C> prompt pg

   What does your prompt now display? C:\>

2. Now type:

   C:\> prompt v_ Today is dg

See how easy it is to change your prompt. For the remainder of this course, we want our system to reflect what directory we are currently working in. Do you remember what this command is?

NOTE: To restore the system prompt to its standard form, simply type the word *prompt* by itself.

Below is a list of characters you can use to change the prompt. You can also type in a phrase you wish to appear as a part of the prompt.

Character	Procedures
d	The current date
p	The current directory
n	The current drive
t	The current time
v	The DOS version number
g	A greater than sign
l	A less than sign
b	A vertical bar
q	An equal sign
e	An escape character
h	A backspace
$	A dollar sign
_	A signal to end the current line and start a new line (This is an underline.)

NOTE: The above characters should be preceded by a $. Text you type in does not use a $ sign.

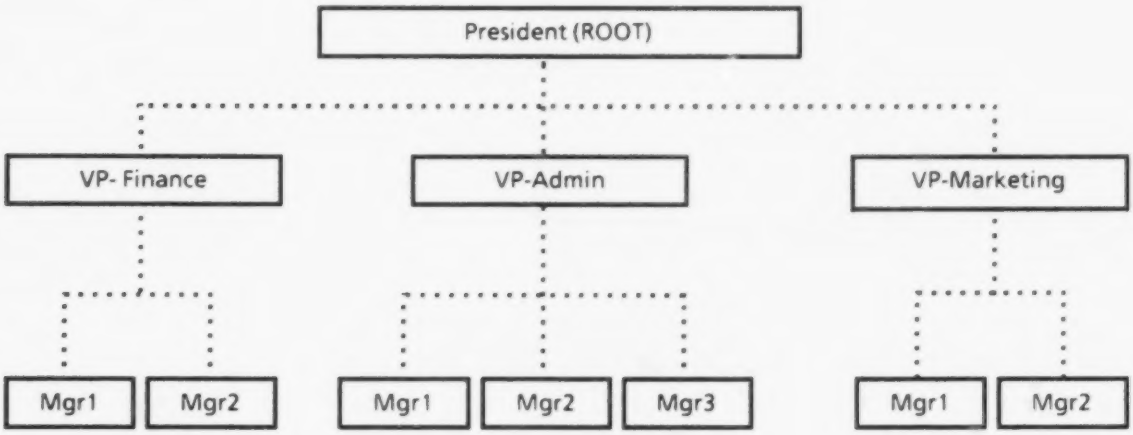
3. At the prompt, type "ver" to find out what version of DOS you have.

THE STRUCTURE OF DOS

DOS is often referred to as a tree-structured file system. This is because it starts with one main directory called root, and branches out from this main directory into subdirectories. The backslash symbol (\) is known as the **root directory** and is always the highest level or main directory in DOS. From here, you can create many subdirectories which can then contain subdirectories and so on. This type of file structure can be very beneficial to the user in terms of organizing files for quick location.

To better understand DOS's file system, let's compare it to a company's organization chart. At the top you have the president, then the vice presidents, then the managers, etc.

If we were to set this up in DOS, we would simply make the president = root, the vice president - 1st level of subdirectories, the managers = 2nd level of subdirectories, etc.



To reach Manager 2 under the VP-Administration, you must follow a logical sequence or **path**. In DOS, this path would be indicated as:

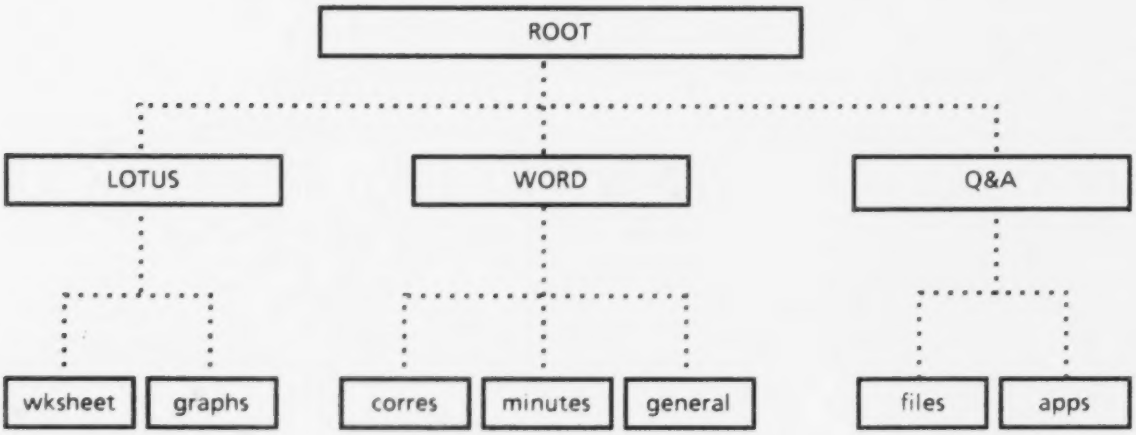
C:\ > \vp-admin\mgr2

Notice you start at the root (\), move down to the vp-admin subdirectory and down one more level to mgr2.

You will want to create a subdirectory for each application package (Word, Lotus, Q&A) installed on your PC to keep these files separate. Within each of these directories, you may wish to create subdirectories. By creating logical subdirectories for your work, you will increase your efficiency and your machine's efficiency by being able to locate your documents quickly and easily.

On the following page you will see an example of how your hard disk might be organized.

EXERCISE - ORGANIZING YOUR HARD DISK



What would the path be to get to the following directories?

1. minutes _____ *\WORD\minutes*
2. general _____ *\WORD\general*
3. Q&A _____ *\Q&A*
4. graphs _____ *\LOTUS\graphs*
5. Root _____ \
6. LOTUS _____ *\LOTUS*

CREATING DIRECTORIES

To create or make a directory:

mkdir (directory name) (or md)

EXAMPLE:

Command	Result
C:\> mkdir \lotus	(creates a directory where Lotus program files would be stored - the path for this directory would be \LOTUS)
C:\WORD> mkdir john	(creates a subdirectory under WORD to store John's word processing files in - the path for this directory would be \WORD\JOHN)

NOTE: Your directory name can be up to 8 characters long plus a 3 character extension. (Note: You do not normally see directory names with extensions.)

EXERCISE - CREATING DIRECTORIES

Let's make a subdirectory under ROOT called TRAINING.

1. At the system prompt type:

   C:\> mkdir \ training

NOTE: Unless you make an error in the command entry, DOS makes no confirming response to your command other than to respond with the C:\>.

Now let's learn how to view the contents of a directory.

VIEWING DIRECTORIES

Often you will need to see what a document has been named, or perhaps you are trying to locate a particular file. The directory command will allow you to see a list of all files in the specified directory, as well as any subdirectories under it.

To see the contents of the current directory:

dir /w/p

Options:

/w = wide display of directory showing only the filename and extension in columns across the screen

/p = pause after displaying a screenful of entries, pressing any key to continue your display - included in the display is filename, extension, size of file in bytes, creation date and time.

NOTE: It is possible to see a listing of entries of a directory other than the current one by including a pathname in your command.

EXAMPLES:

Command	Result
C:\> dir	(displays entries of current directory)
C:\> dir \WORD\MINUTES /p	(displays entries in the Minutes subdirectory pausing after each screen)
C:\> dir a:	(displays entries on the floppy disk in drive A)

EXERCISE - VIEWING DIRECTORIES

1. At the system prompt type:

   C:\> dir

   Do you see the directory you just created? What directory are we looking at?

2. Try viewing the directory using the /p and /w options.

CHANGING DIRECTORIES

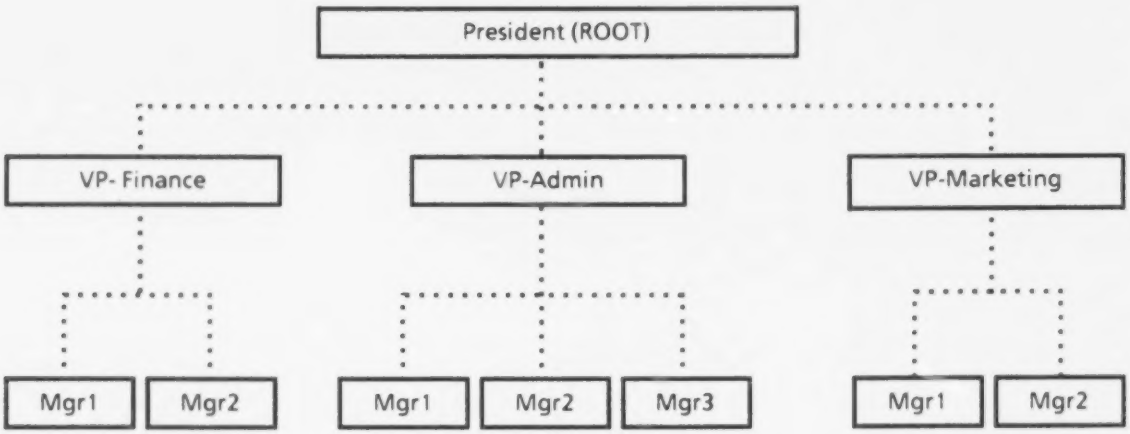
Once you have several different software applications on your machine, each in its own directory, you will need to know how to change to the correct directory so you can begin working in that particular application package.

To change from one directory to another:

cd (directory name)

EXAMPLES:

Using our same organization chart from earlier:



Command	Result
C:\> cd \vp-finance	(moves one level down from root)
C:\vp-finance > cd \vp-marketing\mgr2	(moves from VP-Finance directory to Mgr2 directory under the VP-Marketing directory)
C:\vp-marketing\mgr2 > cd \	(moves back to the root directory)

NOTE: Typing in cd by itself displays the current or working directory name.

EXERCISE - CHANGING DIRECTORIES

1. At the system prompt type:

   C:\> cd \training

2. View the current directory. Are there any files there?

3. Now switch back to the root directory by typing:

   C:\TRAINING > cd \

REMOVING DIRECTORIES

Now that you have learned to create a directory, you may have a need to remove or delete a directory. To do this, type:

rmdir (directory name) (or rd)

EXAMPLE:

Command	**Result**
C:\> rmdir \classes	(removes a directory under ROOT called classes)
C:\> rmdir \word\files	(removes a subdirectory called FILES under the WORD directory)

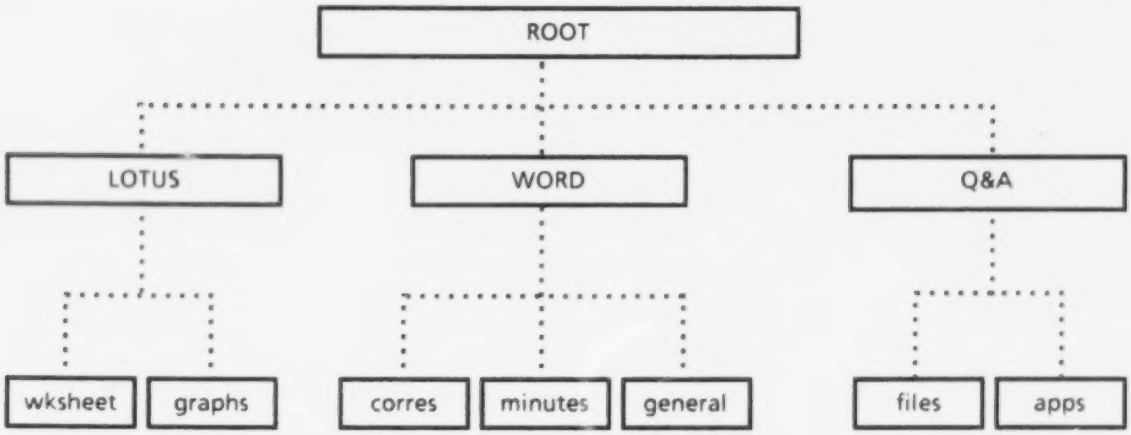
NOTES:

– You cannot be in the directory which you are trying to remove.

– All files must first be deleted from a directory before it can be removed.

– If you are not sure what the directory is, do not delete it.

EXERCISE - EXTRA PRACTICE



1. Using the mkdir command, create the subdirectories located under each of the three main program directories. (Lotus, Word, and Q&A have already been created on your hard disk and contain the program files necessary to run each of the packages.)

   Remember, to make a subdirectory under an existing directory, either include the full pathname or change to that directory before issuing your make directory command.

2. Using the cd (change directory) command, indicate on paper the path to follow to each of the following directories. Then try it!

   Be sure to notice the prompt which will indicate where you currently are.

1.	minutes	C:\>	_____
2.	general	C:\WORD\minutes>	_____
3.	root	C:\WORD\general>	_____
4.	Q&A	C:\>	_____
5.	apps	C:\Q&A>	_____
6.	Root	C:\Q&A\apps>	_____
7.	LOTUS	C:\>	_____

3. Finally, remove the Minutes subdirectory (rd ^ \WORD\minutes).

The COPY Command

There will be occasions when you will need to copy files from one directory to another or when you will need to copy a file to another disk. You will also have a need to duplicate entire disks. For this you will use the copy command.

The structure of the copy command is:

copy (source drive:filename) (target drive: filename)

By using **wildcard characters**, it is possible to copy similar files with one command. For example, all word processing files that are created in Microsoft WORD have a file extension of *doc* (unless you specify something else). Perhaps your directory shows a listing such as the following:

budget.doc
minutes.doc
minutes.bak
smith.doc
lotus.bat

To copy all the files with the *doc* extension, simply use the wildcard character (*) to represent the filename. This would be represented as *.doc.

You can also use the ? as a wildcard character. However, when using the ?, it must be an exact match, character for character. For example, if the date was part of your file naming system, the command 03??87.doc would find all files created in March, 1987.

EXAMPLES:

Command	**Result**
C:\> copy \file1.doc \file2.doc	(makes an exact copy of file1 and names it file2 in the ROOT directory)
C:\> copy \lotus\annual.wk1 \lotus\monthly.wk1	(makes an exact copy of annual.wk1 and places it in the same directory, LOTUS, but gives it a new name of monthly.wk1)
C:\> copy a:*.* c: \word\files*.*	(copies all files from the floppy disk in drive A to a subdirectory under WORD called FILES on drive C)
C:\> copy \word*.chc \word\coles*.chc	(copies all files in the WORD subdirectory that end in *chc* to a subdirectory called COLES.

C:\WORD> copy a:*.* (copies contents of floppy disk to the current directory)

NOTE: If you are in the directory you wish to copy to, it is not necessary to include that pathname in your command as the target directory.

EXERCISE - COPYING FILES

1. Look at the directory of root. If you are not in the root directory, use the change directory command to get there.

2. You will see a file called copyme.doc. Copy this file to the training directory.

   C:\> copy copyme.doc \training

3. View a directory of training to check that your file copied correctly.

   C:\> dir \training

4. View a directory of root again. Notice there are several files with a command extension of .trn. Copy all of these files at the same time to the training directory.

   C:\> copy *.trn \training

5. Change to the training directory and view your files.

   C:\> cd \training

   C:\TRAINING > dir

   You should have a total of seven files in your directory.

6. Change back to the root directory.

   C:\TRAINING > cd\

COPYING FROM A FLOPPY DISK

1. Insert the floppy disk provided in Drive B (Drive A if you have only one floppy drive).

2. View a directory of Drive B.

   C:\> dir b:

3. Copy a file called budget.doc to the GENERAL subdirectory under WORD.

   C:\> copy b:budget.doc \word\general

   or

   C:\> cd \word\general

   C:WORD\GENERAL> copy b:budget.doc

4. View the directory of GENERAL to make sure the file copied correctly.

5. Now copy all the files on the floppy disk to the APPS Directory of Q&A.

   C:\> copy b:*.* \q&a\apps

   or

   C:\> cd \q&a\apps

   C:Q&A\APPS> copy b:*.*

The RENAME Command

Occasionally, you may need to rename a file or series of files to better reflect what that file refers to. With the rename command, this is easy.

ren (old filename) (new filename)

EXAMPLES:

Command	Result
C:\> ren oldfile.doc newfile.doc	(renames oldfile to newfile in the Root directory)
C:\> ren *.let *.ltr	(renames all files with a *let* extension to have a *ltr* extension)

EXERCISE - RENAMING FILES

1. Change to the training directory.

   C:\> cd \training

2. Rename the file called copyme.doc to deleteme.doc.

   C:\> ren copyme.doc deleteme.doc

3. Look at a directory of training to see if the file has been renamed.

   C:\> cd \training

   C:\TRAINING > dir

The DELETE Command

You may find it necessary to occasionally delete files or the contents of a disk. BE VERY CAREFUL! You may easily delete something you should not. If, however, you are sure you want to delete, the command is as follows:

del (filename)

EXAMPLES:

Command	Result
C:\> del file1.doc	(deletes a file named file1.doc in the Root directory)
C:\> del *.doc	(deletes all files with an extension of *doc* in the root directory)
C:\> del a:*.*	(deletes all files on the floppy disk in drive A)

NOTE: If you do not know what a file is or what it does, do **not** delete it until you find out.

EXERCISE - DELETING FILES

You need to be in the training directory. If not, use the change directory command to get to this point.

1. Let's delete the document called deleteme.doc.

   C:\TRAINING > del deleteme.doc

2. View your directory to see if this file is gone.

3. Now delete the remaining files using the wildcard character.

   C:\TRAINING > del *.trn

4. View your directory once again to see that all files are gone. (You will notice two files remaining. These are directories that are automatically created by DOS each time a directory is created. DO NOT TRY TO DELETE THEM!)

5. Change back to the root directory.

   C:\TRAINING > cd \

The BACKUP and RESTORE Commands

BACKUP

Backing up files is very similar to paying the insurance premium on your car or house. Hopefully you will never need it, but if you do, it's worth every penny you spent on it. Similarly, the time spent doing backup is worth it, should your hard drive go bad and you lose all of your data that may have accumulated for months.

It is extremely important that you periodically back up the data on your computer. The fastest and most efficient way to do this is with the backup command.

Backup is a little different from the copy command in that backup knows when a floppy disk becomes full and asks that another be inserted, whereas, copy just fills a disk up and stops.

The backup command is as follows:

backup (source drive:pathname) (target drive:) /a/s/m/d:date/f

/a	adds the backup files to the backup disk (rather than erasing all files on the backup disk before making the backup copies)
/s	backs up all subdirectories
/m	backs up only files that have been modified on that disk since the last backup
/d:date	backs up all files that have changed since date specified
/f	formats the floppy disk then backs up

EXAMPLE:

Assuming that you have created a directory for your word processing files, the command to back them up would be:

C:\> backup \word\files*.* a:

NOTE:
1) Backup will delete any files on the target disks.
2) If using new disks, format them before backing up.
3) It is very important to label and number the disks you use during backup.

EXERCISE - BACKING UP YOUR FILES

1. Insert the Floppy Disk into Drive B.

2. Type:

   C:\> backup \q&a\apps*.* b:

   or

   C:\> cd \q&a\apps

   C:Q&A\APPS> backup *.* b:

That's all there is to it!

RESTORE

The restore command is the counterpart of backup. Should you ever need to restore your data due to a malfunction of your computer, the command would be as follows:

restore (source drive:) (target drive:pathname) /s/p

/s restores all files from the directory and its subdirectories

/p tells DOS to prompt you for confirmation before restoring files that have changed since they were backed up

EXAMPLE:

To restore what was just backed up in the previous example:

C:\> restore a: \word\files*.*

NOTE: It is imperative that you restore the disks in the order in which they were backed up.

A single file can be restored by including the name of the file in the restore command.

Example: C:\> restore a:upgrade.doc \word\files\upgrade.doc

The FORMAT Command

When you receive a new box of disks, they are not yet usable by your machine. A function called formatting must be performed on them to prepare them to accept your files. This is a very simple command, but probably the most dangerous command in DOS!

Why is this? Formatting a disk will completely wipe it clean. Therefore, you could mistakenly format your hard disk drive (C:) and lose all your software and files before you realize what has happened!

Should you decide to pursue the formatting command after this dire warning, it is as follows:

format (drive:) /v

/v allows you to give the disk a name or volume label

EXAMPLES:

Command	Result
C:\> format a:	(formats floppy disk in Drive A)
C:\> format b:	(formats floppy disk in Drive B)

NOTES ON DOS

- File names and Directory names can be 8 characters long plus a 3 character extension. Note that WORD automatically assigns a *doc* extension to files, Lotus assigns a *wk1* extension to worksheets you create, and Q&A automatically assigns a unique 3 character extension to files created in Q&A.

  Minutes.doc janbudg.wk1 members.doc classes.idx

- After typing in a command, touching the return key or the enter key will execute your command.

- DOS uses both forward (/) and backward (\) slashes. Backward slashes are used in the path name. For example: *\word\files\minutes.doc* represents the path to the document named minutes. Forward slashes are used in commands to DOS to indicate an option of the command. For example: *dir/p* tells DOS to list a directory and pause after each full screen of entries.

- DOS assumes the files, directories, and drives you are working with are in the current directory on the current drive. If this is not the case, simply direct DOS to look in a different directory (by including a pathname) or on a different drive when you enter the command.

- It is not necessary to type your commands in uppercase. DOS is not case sensitive and does not care whether you type in upper or lower case.

- Unless you make an error in the command entry when typing in commands like mkdir, rmdir, and del, DOS makes no confirming response to your command other than to respond with the C:\>.

HANDLING YOUR DISKS

- Do not touch the exposed portion of the disk.

- Do not bend or paper clip your disks.

- Use only a felt tip pen to write on your disks, never use a ballpoint pen or pencil as this could make an impression on the disk.

- Do not place your disk near any magnets. This includes placing a disk near or on a phone. Your data can become scrambled.

- Do not expose your disk to extreme hot or cold temperatures or leave it lying in the sun as it can become warped.

TIPS

- If you are concerned that you will format your hard disk by mistake, take heart; there are a number of programs to choose from that may be installed on your machine that will prevent this from happening.

- Often times you will repeat a DOS command several times in a row. Instead of retyping the command over and over, simply touch the F3 key to repeat the command.

- If you plan to move your computer, it is a good idea to secure the hard disk drive to ensure that it will not be damaged in the move. If you work on an NCR computer, at the prompt, type in SHUTDOWN, or on a Zenith computer, type in the word SHIP. By doing this simple command, you reduce the risk of losing the data on the hard disk drive during your move. (If you use a different type computer, your reference manual should provide you with the hard drive park command.)

QUICK REFERENCE DOS COMMAND SHEET

To Reset Computer:
Ctrl/Alt/Del

To Change Drives:
a: changes to floppy drive
c: changes to hard drive

To Create a Directory:
mkdir (directory name) — mkdir \lotus

To View a Directory:
dir /w wide listing
dir /p pause after each screen

To Change Directories:
cd (directory name) — cd \word

To Remove a Directory:
rmdir (directory name) — rmdir \general

To Copy a File:
copy (from filename) (to filename) — copy master.doc jones.doc

To Copy Current Subdirectory to a Floppy Disk:
copy *.* a:

To Copy a Floppy Disk to Current Directory:
copy a:*.*

To Rename a File:
ren (oldname) (newname)

To Delete a File:
del (filename) — del jones.doc

To Delete a Floppy Disk:
del a:*.*

To Backup Current Directory:
backup (source files) (target drive:) — backup *.doc a:

To Restore to Current Directory:
restore (source drive) (pathname) — restore a: *.doc

To Park Hard Drive for Moving:
shutdown (for NCR computers)
ship (for Zenith computers)

APPENDIX C

COMPUTER TERMS

APPENDIX C

COMPUTER TERMS

alternate key	has no function by itself; is used to change other keys into application dependent special function keys.
arithmetic/logic unit	one part of the central processing unit (CPU).
assembler	a program that translates assembly language into machine language.
assembly language	a computer language written in alphabetical terms using short abbreviations.
BASIC	Beginner's All-Purpose Symbolic Instruction Code. A popular high- level computer language.
binary numbers	either of the digits 0 or 1.
block movement	enables the computer to move, copy, save, or delete blocks of text (a phrase, sentence, or a paragraph).
CAD	computer-assisted drafting.
CAM	computer-assisted manufacturing.
cell	the intersection of a row and column in a spreadsheet program.
character enhancement	lets the computer underline, boldface, italicize, superscript, and/or subscript characters as they are printed.
CIM	computer-integrated manufacturing.
COBOL	COmmon Business Oriented Language, a high-level business application computer language.
compiler	a program that translates a high-level language into the machine language a computer understands.
computer	a system that is designed and organized to automatically accept and store input data, process them, and produce output results under the direction of a detailed step- by-step stored program of instructions.

control key	has no function by itself; is used to change other keys into application dependent special function keys.
control unit	a part of the central processing unit that processes information.
CPU	central processing unit; the "brain" of the computer system.
CRT	cathode ray tube, another name for the video terminal or monitor.
data base	a group of independent data files.
delete key	normally will delete the character that the cursor is positioned on.
digitizer	an input device.
disk	a revolving platter upon which data and programs are stored.
disk drive	an auxiliary storage device.
diskette	a floppy disk.
end key	usually moves the cursor from its present position to the last character in the same line.
escape key	usually application dependent.
FAX	a system used to transmit pictures, text, etc., between geographically separated points.
field record	one data item or a single fact such as a student's name in a data base program.
file	a group of related records, such as a class file.
format	in word processing, may apply how characters, paragraphs, and pages will look. See character enhancement.
FORTRAN	FORmula TRANslator; a very complex scientific oriented high-level computer language.
graphics	gives the computer system the ability to draw lines, figures, charts and graphs, etc.
hardware	describes all the physical equipment in a computer system.

hide	in a spreadsheet program, temporarily removes unwanted cells from the screen.
high-level language	a computer language that uses English and English-like terms.
initialize	format--to prepare a disk to accept information.
input device	hardware that obtains data and places it into the computer system for processing.
interpreter	similar to a compiler, i.e. a program that translates a high- level language into the machine language a computer understands.
JIT	just-in-time manufacturing; a method that makes sure that purchased materials and parts arrive at the factory just in time to be used on the production line.
keyboard	an input device.
light pen	an input device, used principally in engineering work.
load program	following specific instructions to start up a specific program such as word processing.
Logo	a popular computer language used to teach elementary students math concepts.
machine language	the only language a computer system understands. Uses binary numbers for instructions.
memory	storage--a place or medium that holds information to be processed or holds processed information until needed.
menu	portion of software program that names or shows pictures of the actions that may be taken within that program.
modem	a device that allows computers to communicate with each other, Normally uses telephone lines.
monitor	an output device; same as a CRT or video terminal.
mouse	an input device.

numeric lock	toggle switch that allows use of the numeric keys on the right side of the keyboard.
output device	those parts of the computer system that display information.
page down key	usually used to display the next screen page.
page up key	usually used to display the previous screen page.
pagination	enables the computer to automatically number the pages of a printed document.
Pascal	a high-level language used to teach programming concepts to students.
plotter	an output device similar to a printer; however, used more in engineering and drafting.
power fluctuation	power surges in the electrical lines.
power outage	interruption or loss of power.
printer	output device.
processing device	manipulates data or information, such as the CPU.
program	a set of sequenced instructions that tell the computer what operations to perform.
robot	a device programmed to physically manipulate its surroundings.
RPG	Report Program Generator, a computer language designed to produce business reports.
run program	using a specific program after it has been loaded.
save	copies a file to a disk or tape.
scanner	an input device.
SCOIS	South Carolina Occupational Information System, a computerized method of delivering occupational information.
scroll lock key	a toggle switch that allows text to be moved on and off the screen.

search and find	locates a specific character string (word, words, or phrase).
search and replace	locates a specific character string and substitutes it with a different character string.
sector	floppy disk divisions.
software	contains the instructions for the computer system.
sort	causes the computer to arrange existing information in a variety of ways, e.g., alphabetical, numerical, ascending, etc.
spelling checker	checks each word against a list of correctly spelled words in a dictionary.
spreadsheet	a program that does calculations and records transactions electronically.
storage unit	a device or medium that holds information.
tape drive	a storage device that holds information on a special tape.
template	as used in a spreadsheet program, a set of instructions that eliminates repetitive tasks.
track	a portion of the disk that information is stored on electronically.
video terminal	an output device similar to the CRT or monitor.
warm boot	restart the computer without using the off/on switch (key ctrl + alt + del simultaneously).
window	allows the screen to be split into several parts to view different areas of a program.
word processing	a program used to write documents.
word wrap	causes the last word to move to the next line when that word goes beyond the right margin.

APPENDIX D

TEST QUESTIONS AND ANSWERS

PO #	QUESTIONS
1	1. Devices such as light pen, digitizer, and keyboard are considered to be _____.
1	2. Three basic computer operations are _____, _____, and _____.
1	3. A(n) _____ terminal displays information to the operator.
2	4. Computers are capable of a great degree of accuracy. True or False?
2	5. An advantage of having a computer store data is that it can sort large quantities of information. True or False?
2	6. Computers allow humans to solve more complex problems. True or False?
3	7. The term used to describe all the physical equipment in a computer system is _____.
3	8. The term used to describe the programs the computer uses to process data is _____.
3	9. A word processing program is an example of _____.
4	10. Software gives _____ to the computer.
4	11. The device that interprets and executes instructions and communicates with input/output storage devices is called the _____.
4	12. To give commands to a computer, a(n) _____ with keys that represent different letters, numbers, and other symbols is used.
5	13. When in doubt about maintenance procedures for a piece of equipment, it is always best to _____.
5	14. Why should space be allowed for airflow around the computer?
5	15. The disk heads should be cleaned _____.
6	16. _____ language uses a binary code.
6	17. The oldest high-level language is _____.
6	18. Assembly language terms must be translated to the computer by a(n) _____ program.
7	19. Why are power switches hard to reach on most computers?

PO #	QUESTIONS continued
7	20. What will probably happen to your information if the computer is turned off while you are working?
7	21. What is a good reference to use to locate the on/off switch for a computer?
8	22. The function of the "CAPS LOCK" key is to _____.
8	23. To copy the screen to the printer, the operator must hold the shift + prtsc simultaneously. True or False?
8	24. DEL will normally remove the character the cursor is highlighting. True or False?
9	25. Preparing a diskette to accept information is called formatting or initializing. True or False?
9	26. When a diskette is reformatted, the old contents are removed. True or False?
9	27. The formatted, or initialized, disk is divided into tracks and sectors. True or False?
10	28. In order to store information on a disk it must be _____ or _____.
10	29. To keep a file on a disk usually you must perform a(n) _____ function.
10	30. A "warm boot" to restart the computer is accomplished by pressing the control + num lock keys. True or False?
11	31. Should the computer be connected to some form of surge protector? Why or why not?
11	32. What will happen to information on the screen if the power is interrupted during use?
11	33. How can power interruptions damage the computer?
12	34. Margin settings in word processing generally work the same as in a standard typewriter. True or False?
12	35. Writing with a keyboard is a simple explanation of word processing. True or False?
12	36. Most typewriters have the standard "search and find" feature. True or False?

PO #	QUESTIONS continued
13	37. A group of independent data files is called a(n) _____.
13	38. Converting a traditional manual filing system into an electronic filing system is the purpose of a(n) _____.
13	39. Data bases are generally stored on a(n) _____.
14	40. _____ _____ feature gives the computer the ability to enlarge or reduce the width of a cell.
14	41. _____ _____ feature prevents someone from changing a formula in a cell.
14	42. _____ _____ feature allows the user to name an individual cell.
15	43. CIM is an abbreviation for _____ _____ _____.
15	44. To produce custom-tailored parts and control the costs it is best to use the _____ manufacturing system.
15	45. JIT means _____ _____ _____.
16	46. The proper abbreviation for computer-aided drafting is _____.
16	47. CNC works directly with the computer-assisted _____ system.
16	48. CAD/CAM systems may be part of a(n) _____ _____ system.
17	49. Because they are smarter, robots can do things that humans can't do . True or False?
17	50. To give a robot "feel," a camera is strapped to its wrist or arm. True or False?
17	51. The automobile manufacturing industry makes extensive use of robots. True or False?
18	52. 6 * 3 =
18	53. 21 / 7 =
18	54. 3 ^ 2 =
19	55. What does SCOIS stand for?

PO #	QUESTIONS continued
19	56. The economic news file gives information about economic and employment news for South Carolina and its counties, as well as the nation. True or False?
19	57. The command to stop and return to the beginning of COIN is _____.
20	58. A word processing program is useful for keeping track of names, addresses, and telephone numbers. True or False?
20	59. Spreadsheet programs generally work well for writing short letters or memos. True or False?
20	60. Data base programs are useful for "What if" situations. True or False?

PO #	ANSWERS
1	1. input
	2. inputting, processing, outputting
	3. video
2	4. True
2	5. True
2	6. True
3	7. hardware
3	8. software
3	9. software
4	10. instructions
4	11. CPU (central processing unit)
4	12. keyboard
5	13. consult owner's manual
5	14. to prevent heat build-up
5	15. monthly
6	16. machine
6	17. FORTRAN
6	18. assembler
7	19. To prevent accidental switching off.
7	20. The computer will lose any information that has not been saved.
7	21. Computer manual
8	22. type all capital letters
8	23. True
8	24. True
9	25. True
9	26. True
9	27. True
10	28. formatted, initialized
10	29. save
10	30. True

PO #	ANSWERS continued
11	31. Yes, power fluctuations can cause surges that could burn out components in the computer and cause damage to the memory.
11	32. In most cases the information will be lost unless the power loss is only to the monitor or the information was saved.
11	33. Damage to the computer might occur from power surges that cause the voltage to increase and decrease on the line feeding the computer. Spilled fluids will short the components and can be irreparable if they contain sugars, as these crystallize and cause short circuits and loss of signal.
12	34. True
12	35. False
12	36. False
13	37. data base
13	38. data base program
13	39. disk
14	40. Column width
14	41. Locking cells
14	42. Naming cells
15	43. computer-integrated manufacturing
15	44. flexible
15	45. just -in-time
16	46. CAD
16	47. manufacturing
16	48. flexible manufacturing
17	49. False
17	50. False
17	51. True
18	52. 18
18	53. 3
18	54. 9

PO #	ANSWERS continued
19	55. The South Carolina Occupational Information System
19	56. True
19	57. /S
20	58. False
20	59. False
20	60. False

APPENDIX E

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APPENDIX E

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